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Troubled Multi-System console under pressure

KONIX DELAYED UNTIL NEXT YEAR AT LEAST

Mystery surrounds the future of Konix's Multi-System games machine. The £199 'space age' console is already nearly a year late, and its prospects are bleak.

Konix has put the console on ice, according to insiders, who say that the firm is concentrating on its joystick range. Certainly, Konix has stopped circulating likely launch dates to the trade, and according to one source a 1990 launch is now 'not on the cards'.

Worse, many software developers have stopped working on games for the console. Argonaut, which was working on a motorcycle game, has shelved the project until it receives positive notice from Konix. System Three has completed a version of *Last Ninja 2* but boss Mark Cale has no idea what will become of the game.

Konix's one time software co-ordinator Jon Dean is only communicating with Konix through his lawyers. He had been appointed to oversee software development but has not worked for Konix since October. He claims to be owed money by the Welsh company.

Many had expected a lengthy delay over the machine's launch following the sale of a substantial share of the company to Southampton-based distributor Add-Ons. However, that deal was negotiated last September and finalised long before Christmas.

• Konix console: mystery.

Last week no-one at Konix was prepared to comment, indeed information on the console has been non-existent since the Add-Ons deal.

Jon Dean told *Express:* "I think if they were to launch they'd have to virtually begin the software development program all over again. All that work has been wasted. It's a real shame because the technology was brilliant and a great idea. I only hope that, even if the Multi-System doesn't appear, then the technology will be used elsewhere. Konix just haven't been able to get their act together."

The machine was first shown in January 1989 and was universally received with enthusiasm The finished product was to have had a detachable steering wheel and separate pedal unit as well as numerous peripherals and an arcade-style moving chair.

It was hoped that the Multi-System would signal a new era in home entertainment by emulating successful arcade machines such as *Afterburner* and *Super Hang On.* It was designed by Konix founder and the inventor of the Konix range of joysticks, Wyn Holloway

At the time the company said it had invested 'everything' it had in the project. Even then the critics warned that the competition would be too tough. Only 15 months on, the games console market has been transformed by a series of high profile launches by large Japanese and American companies. ■

ANIMATED CONVERSION

• Deluxe Paint Animate, a graphics package for the PC which allows you to draw animations straight on to the screen, will be released in July.

The £99.99 package from Electronic Arts works in the 256-colour MCGA graphics mode and will also work on a VGA system.

Animation was originally included in Deluxe Paint 3 *on the Amiga and its success has brought it across to the PC. For further information ring Electronic Arts on 0753 49442.* ■

Big blue laser could make a 2,600Mb disk

Scientists at IBM in the US claim to have discovered a way to make a laser which could increase the amount of data stored on an optical disk fourfold.

This means that a CD-sized disk would be able to hold 2,600Mb instead of the current 650Mb.

The blue light laser, made entirely of solid state materials, is claimed to be five times more efficient than the conventional infra-red diode lasers used in CD-ROM drives.

This increase allows the light to be focused to a smaller spot and thus fit more information on to a laser driven disk.

The blue laser light was made by passing infra-red laser light through a 7mm-long potassium niobate crystal to double the frequency of the light emission. This halves the wavelength and takes the colour into the blue area of the spectrum. ■

EC clamps down on monitors with strict set of guidelines

Tough new EC regulations on the use of video display terminals (VDTs) at work will mean new laws in the UK despite Britain abstaining in the vote.

The directive gives specific requirements on the use of VDTs at work and when the regulations come into effect employers will have to provide:

- Glare-free screens that are able to tilt and swivel
- Adequate spacing between characters and lines.
- No flickering and adjustable brightness and contrast.
- Adjustable seats with a footrest.
- Work surfaces that can be adjusted.

As well as these requirements, free regular eye-tests will be available to workers using VDTs and employers will be obliged to pay for spectacles if VDT workers have work-related vision problems.

Laptops and portables are exempt as long as they aren't in prolonged use 'as a workstation'. Items with small displays like cash registers and calculators are also exempted.

Britain was the only abstainer in the EC vote and an official said: "The rules are too broad and could potentially apply to too many devices. The term 'video display unit' was coined for computers and we felt the rules should be limited to that."

Workers will be able to take their companies to court if they believe that the regulations have been broken.

All new systems will have to comply from 1992 and full implementation of the measures will be in place by 1996.

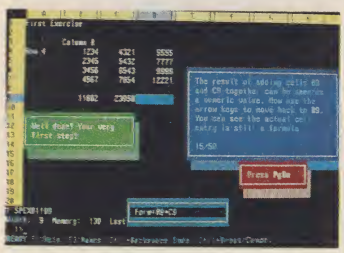
Simple swaps for ST/Amiga

A device from Music Suite will be music to the ears of those struggling with file transfers.

It connects the printer port of one computer to the serial port of an Amiga or ST and will transfer documents and mono picture files while retaining their original formats.

The Printercept is a soft/hardware link that makes the ST or Amiga look as if it were a printer to the computer sending the file. Instead of it being printed it is captured by the Amiga or ST and can be converted to various word processing formats or in the case of a picture, *Neochrome* or Degas.

Printercept costs £34.95 for the ST and Amiga. PC, Archimedes and Macintosh versions are promised soon. Music Suite is on 0239 710594.



• *Interactive training on* Supercalc *by* Insight.

Take the strain off training

Comput-ed Limited has released *Insight*, an interactive authoring system that needs no programming knowledge and which can produce useable tutorials in a few hours.

The system, which is designed for DOS-based computers, is ideal for producing interactive tutorials for application software, for instance – or training aids for new operators.

Insight costs £190 for a single-user copy; £280 for multi-user – more information from 0626 866247.

Amstrad sinks

Scientists Geoff Bullock and Paul Bird, both from Polytechnic South West at Plymouth, are using an Amstrad PPC640 and its built-in modem to measure wave energy. Instruments sitting on the sea bed are accessed by a data link which enables them to study the effects of waves on Britain's coastal defences.

Commodore's machine is talk of Chicago CES

CDTV BRINGS AMIGA MULTIMEDIA HOME

The wraps finally came off Commodore's CD console last weekend and, as predicted, the machine is Amiga-compatible – but will be pitched as a domestic multimedia player rather than a computer.

The machine, launched at the prestigious US Consumer Electronics Show in Chicago, is promised in the UK before the end of the year.

The Commodore Dynamic Total Vision (CDTV), resembling a video cassette recorder or audio CD player, can be plugged into a hi-fi system and any TV or RGB monitor and is controlled from an infra-red remote handset.

Although the standard unit will be sold as an "interactive multimedia information, education and entertainment" system, it will effectively be possible to turn it into a CD Amiga 500 by adding a 3.5-inch disk drive, keyboard and other peripherals (see box).

While Commodore is dangling the carrot of games "significantly more sophisticated in depth of play, sound and graphics than on any currently available video game or personal computer format", Interactive Consumer Products manager Nolan Bushnell stated that: "The concept that drives CDTV is that of an electronic interactive, instantaneously accessible library."

Claiming that books were now "obsolete", the company made it clear that it is pitching for a wider adoption of its system. "We've an even money chance of becoming a *de facto* standard – so we're under a moral obligation to license," stated chairman Irving Gould.

No firm date or price has been announced for the CDTV's UK launch, but Commodore is talking in terms of 20,000 units being on sale in Britain before Christmas. A price somewhere in the region of £800 seems likely.

The system will include a sampler disk carrying information on drug abuse and 'other medical issues'. Commodore says it anticipates that over 100 titles will be available by the time the machine is launched in the US this autumn, rising to 200 by Christmas. Disk prices are expected to range from $30 to $100.

Tech specs

The CDTV is an Amiga with a standard 68000 chip. It features 1Mb of RAM and the new dedicated chip set.

There is a slot for dedicated video boards – a genlock will probably be the most common use. Programs can be stored on video tape.

The CD is a standard CD-ROM drive capable of storing 550Mb on a single disk. In audio mode the player has eight times oversampling with 16-bit D/A converters, putting it in the mid range of audio players. The player incorporates the CD-Graphics system which allows audio CDs to be accompanied by text and graphics. At a much reduced sound quality a disk can hold 14 hours of music.

The back of the CDTV holds the normal range of computer sockets with space for a third-party MIDI port.

The CDTV is controlled by an infra-red handset. Infra-red joysticks, keyboards and trackballs will be available.

Defenders of the SAM

• Defenders of the Earth *in SAM's glorious 16 colours.*

The SAM Coupé has reached an important milestone in its development as Enigma Variations has announced the release of a SAM Coupé specific arcade game – *Defenders of the Earth.*

SAM owners will soon be able to see just what their computer is capable of, since the game features 16-colour, high-resolution graphics, front plane masking and fast action.

The £12.99 cassettes and £16.99 disks are available now. More details from Enigma Variations on 0423 501595.

PC show aims at business

Business users wanting to see what's available without fighting through waves of aliens will be able to visit areas dedicated to the serious side of PC computing at the *PC User* Show.

There will be areas set aside for PC CAD, transputers, portables, and Lotus users, with dedicated sections called PC Solutions, the PC Users Conference and Exhibitors Executive Briefings.

The show takes place at Olympia on June 19 to 21 and more details are available on 081-404 3310.

Test software out first

Systemstar has released *ProTool*, a new language-independent, user interface prototyping tool which allows customers to be shown a demonstration of a final system – before a single line of code is written.

ProTool has a database of windows and fields, a set of scripts to create the simulation and text files to simulate directories and help screens. The client can assess the simulation, screens can be altered accordingly and a copy can be left so that both parties are clear about the desired outcome.

The system is available for PC compatibles and needs 640K of memory and a hard disk. Details from 0992 500919.

The cost of computing

Computer disasters could be costing British businesses at least £1.5 billion a year according to ICL, the computer subsidiary of telecommunications company ST.

In fact ICL believes that one in every thousand businesses will suffer a computer disaster – and 90 per cent of companies without recovery plans will be forced out of business.

In response to requests from worried customers it has now produced a prevention and cure guide called *Disaster Survival* – explaining what to do in the case of fire, flood or malicious damage. Contact ICL on 081-788 7272.

ST and PC used to generate stunning 3D images

THREE-DIMENSIONAL TV BREAKTHROUGH

The Delta Group, a small team of entrepreneurs based in London's Covent Garden led by inventor James Ashbey, has produced a realistic demonstration of 3D TV which needs no special TV monitor or spectacles.

The system, called Deep Vision and currently based on an Atari Mega ST, a Compaq 386 and a Mac II, electronically stimulates the brain into creating a 3D illusion, whatever the viewing angle or distance from the screen. Even more remarkably, the system can produce convincing 3D images from existing films – both colour and black and white.

Mr Ashbey's partner, film maker Adam Williams, explained: "Deep Vision uses a special, computerised decoder to alternatively flash left-eye and right-eye images. It takes a little getting used to but after a couple of minutes the brain soon sorts them out and 'sees' a 3D image.

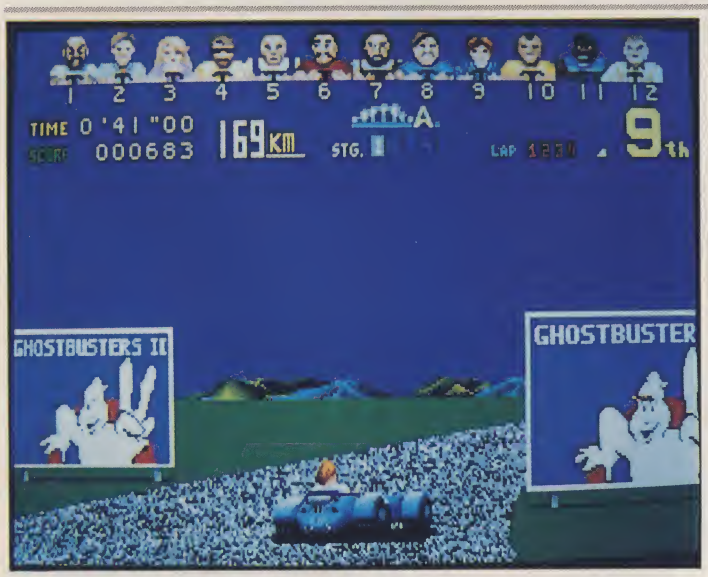
"The theory behind the system comes from James' doctoral thesis on human intelligence and perception. The brain receives two, two-dimensional images on the retinas and interprets these as a 3D image. But because we can't go around looking closely at *everything* all the time, the brain is constantly 'in-filling' other details from what it expects to find."

The system takes an ordinary film and converts it to a digital version in which 'stereo cues' are inserted. The secret lies in understanding just what cue the brain is seeking and then using computers to provide them.

The partnership already has the backing of RCA-Columbia Pictures International and Brent Walker. As well as obvious entertainment applications, the system is expected to adapt well to education and training needs.

"Deep Vision is still at the experimental stage," added Mr Williams. "The model we've built in the laboratory shows a slight loss of resolution but, once in commercial production, resolution should be as good as a normal TV image."

• James Ashby (right), inventor of the 3D TV, with partner and film maker Adam Williams.



• An MS-DOS version of Sega's car-racing arcade hit Power Drift is to be released soon by Activision.

It's a real race 'em up and roll 'em over game with 25 rollercoaster tracks, a variety of landscapes and numerous impolite rival drivers, with names like Jason the Skinhead and Jeronimo the Mohican, all trying to run you off the road. Sounds just like the M25.

All this fast-scrolling, hot-blooded action will soon be available to PC owners for £29.99. Versions for Amiga, Atari ST, C64, Amstrad and Spectrum are already available. Call 0734 311666 for more information.

Burrowing into the big time

In the past computer games have often been based on well-known cartoon or film characters. But in a reverse of the usual licensing trend, top merchandising company Marketing Trademark Consultant UK has signed up Gremlin Graphics' computer game character Impossamole (alias Monty Mole).

With over three quarters of a million copies of the classic game sold, Monty Mole has become the most popular, top-selling computer game character in Europe.

The ultimate aim of the deal is to make Monty Mole an established cartoon character alongside Hollywood greats like Mickey Mouse and Donald Duck. We can expect to see a deluge of suitably adorned clothing, sports shoes, toys, books, mugs, comics and so on very shortly.

MTC already handles other well known names such as Lotus cars, Pineapple and Janet Reger.

Slick new graphics interface brings speed and power to cheap PCs

WINDOWS 3 WILL THREATEN IBM'S POWER MACHINES

Microsoft has launched the latest version of its graphical user interface, Windows, against a background of IBM's barely-disguised annoyance.

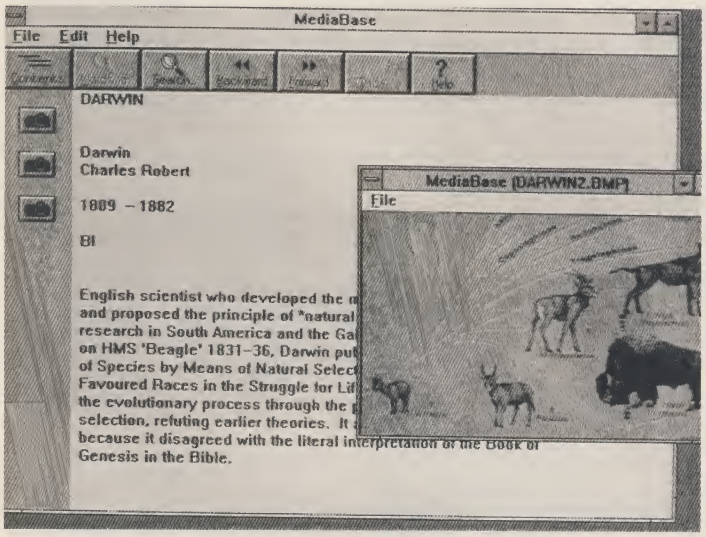
Windows 3, which mimics many of the display features of OS/2 Presentation Manager, comes in at £99. This price and the fact that the product will run on anything from a basic PC-XT with 384K of memory to a 486 machine with up to 16 gigabytes, removes the need for many users to upgrade to the IBM-backed, OS/2 PM environment.

Although IBM gave Windows 3 tacit support at the American Comdex autumn exhibition last year, it has also made it clear it wants users to switch to the more sophisticated and memory-hungry OS/2.

It is partly because of this uncomfortable difference of views that Microsoft was at pains to stress the parallel development of both products. During a series of seminars laid on by the company last week, the separate development of both environments was highlighted again and again. IBM in its turn has recommended Windows 3 as its preferred operating system for PCs with 2Mb or less of memory.

In fact, as was plain from the seminars, Windows 3 is capable of a lot more than that. It can run in three 'modes', with the enhanced mode available only on 386 and 486 machines. Enhanced mode allows areas of hard disk storage to be used as 'virtual' memory, giving up to four times the PC's actual memory in which to run applications. The most obvious improvement, though, is in the graphics display of files and programs. These are now all based on icons, unlike previous versions of Windows which were limited to text items in a graphics window. The opportunities for Windows 3 seem much wider than IBM is prepared to admit. ■

• Watch out for the full review of Windows 3 in next week's *Express*.


MediaBase
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Charles Robert
1809 – 1882
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English scientist who developed the
and proposed the principle of "natural
research in South America and the Ga
on HMS 'Beagle' 1831–36, Darwin put
of Species by Means of Natural Select
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the evolutionary process through the
selection, refuting earlier theories. It
because it disagreed with the literal interpretation of the Book of
Genesis in the Bible.
MediaBase (DARWIN2.BMP)
File

• One of the first products to use Windows 3 is the Hutchinson Electronic Encyclopaedia *from Attica Cybernetics – the first CD-ROM based British encyclopaedia .*

Established for over 40 years as the most highly respected, single-volume encyclopaedia in the English language (it says here), it contains 25,000 entries, 7,000 biographies and 250 tables and time charts.

Powerful software allows search and retrieval from the CD in a number of ways, from word search to casual browsing as well as normal indexing.

The encyclopaedia costs £99 for a single user copy – call 0865 791346 for details.

Tandy bundles Windows 3

Tandy, the high street electronics specialist, is to bundle Microsoft's Windows 3 with all its 16-bit computers.

The move is a departure for Tandy, which produces its own graphical interface for PCs.

The company's merchandising manager, Martin Hanley, said: "This allows our customers state of the art software technology combined with ease of use." ■

The disk with the hole

A special hole puncher that can double the memory of a 720K disk is being marketed by Ctrl Alt Deli.

The Cajun Punch allows a double-density 3.5-inch floppy to be formatted to 1.44Mb, simply by creating a sensing hole in the lower right-hand corner of the disk's casing.

This is possible because the same media is used for both 720K diskettes and 1.44Mb diskettes, and the only difference between them is the sensing hole and the manufacturer's label.

With 1.44Mb disks costing four or five times more than 720Ks, Ctrl Alt Deli estimates that the Cajun Punch, which will retail at £39.95, will pay for itself after about 20 disks.

One of the beta test sites (*sic*) was at the Ford Motor Company in the US where Mr Shaj Datoo, computer manager of Ford Credit, stated: "We have been using the Cajun Punch on diskettes for our Wang equipment with absolutely no problems. If you say that it will save us thousands of pounds it would be an understatement." ■

The things you do for money...

Like dress up in a skirt with a wooden sword. The gentleman on the left is promoting *Time Soldier*, an arcade conversion from Electrocoin which brings with it not only the game but part of the arcade machine.

The free 60cm x 15cm 'top flash' is the plastic strip on an arcade machine that gives the playing instructions, game title and logo.

The game follows a pair of commandos battling their way through time from primitive man to a future world via ancient Rome, medieval Japan, and World War 3.

***Time Soldier* costs £24.99 on the Amiga, £19.99 on the ST, the C64 disk is £14.99,the cassette £9.99.**

• Boots is to start stocking the Commodore.

Boots to stock Amiga over ST

Three years after it stopped selling computer hardware, Boots has ignored the Atari ST to choose the Amiga for its autumn re-entry into the 16-bit market.

Lorraine Gwinnutt, speaking for Boots said: "The Atari ST was also considered, but we chose the Amiga. We believe the Amiga to be the forerunner in its field."

This may come as a surprise and setback to Atari.

Gwinnutt confirmed that Boots had pulled out of the 8-bit hardware market three years ago after teething troubles with hardware and problems with after-sales service. ■

Something for everyone at London show

The third All Formats Show starts on Saturday with the organisers predicting their biggest ever turnout with a hundred exhibitors in place.

The show has been touted as a bargain hunter's paradise, particularly for owners of the less popular micros. For example, MSX owners will have their own village at the show. Said the show's spokesman, Bruce Everiss, "There are 20,000 MSX owners in this country but they have been disenfranchised".

Similarly disadvantaged QL, SAM Coupé, Z88 and Archimedes owners will also find their own sections in the show.

Among the exhibitors will be Micronet, which will be on-line live from its stand.

The show is on Saturday and Sunday, June 9 and 10, and is at the Royal Horticultural Halls, Westminster. Admission is £3 and the show is open 10am to 5pm on Saturday, 10am to 5pm on Sunday. ■

• Programming in Zortech C++ is a book aimed at the programmer with some knowledge of programming who wants to move up to the trendy object-oriented C++ language.

The book costs £16.95 and is out now. More details from distributor John Wiley on 0243 770216. ■

Amiga contest

A competition to find the best Amiga animation will again go hand in hand with this year's Edinburgh Festival.

Winners and finalists will be displayed at the animation exhibition, running from August 11-18. Entries should be on floppy disk or PAL video tape. Entry forms and information from Amiga Centre Scotland on 031-557 4242. ■

From London to Glasgow by mouse

Mouse manufacturer Logitech is claiming to be more than a whisker ahead of its rivals with six million mice sold so far. The six millionth squeaker means that if they were laid nose to tail, they would stretch from Hendon to the River Clyde. ■

Guards can tell you to turn off your computer

BRITISH RAIL LIMITS LAPTOP COMPUTING

British Rail guards are selectively clamping down on people using laptop computers on trains.

A month after BR's business magazine *Inter-City* offered a laptop computer as a prize in a competition in its feature on portable computing on the rails, *Express* received complaints from readers who had been stopped from using their computers by BR staff.

BR spokesman Malcolm Parsons confirmed that the use of certain large or noisy laptops on trains would be against BR's byelaws. He said: "Passengers are required not to create a nuisance on the train. Bleeps from a computer, the clacking of the keyboard or even the large size of the machine could be grounds for a nuisance."

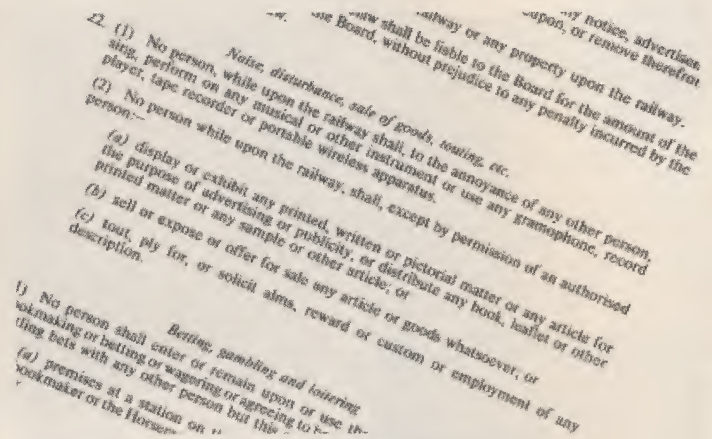
He added that, in the main, a request from BR train staff to stop using the computer would be the result of a complaint from another passenger. He confirmed that the training of senior conductors, as guards are now called, allowed them a certain leeway in the way that they enforced BR's byelaws and that 'common sense' played an important part in the decision making process.

While it seems a senior conductor would normally make the decision to ban a computer's use as the result of a complaint, at least one *Express* reader was stopped from using a word processing package on a laptop purely on the senior conductor's say so.

Tony Quinn, editor of *Inter-City* magazine, circulated to 1,500,000 BR business passengers in first class every year, said: "We wouldn't run articles on computing on the train if there was a BR policy against them."

Express obtained a copy of the BR byelaws and checked the facts. As well as laptops, games consoles and (thankfully) portable stereos are capable of transgressing the rules.

• At a time when BR's rules for on train computing were in confusion, P&O European Ferries contacted *Express* and told us that not only would it encourage businessmen to use portable computers, but in its Club Class, it would even supply mains power! ■



22. (1) No person, while upon the railway shall, to the annoyance of any other person, ... perform on any musical or other instrument or use any gramophone, record player, tape recorder or portable wireless apparatus.

(2) No person while upon the railway, shall, except by permission of an authorised person:—

(a) display or exhibit any printed, written or pictorial matter or any article for the purpose of advertising or publicity, or distribute any book, leaflet or other printed matter or any sample or other article; or

(b) sell or expose or offer for sale any article or goods whatsoever, or (c) tout, ply for, or solicit alms, reward or custom or employment of any description.

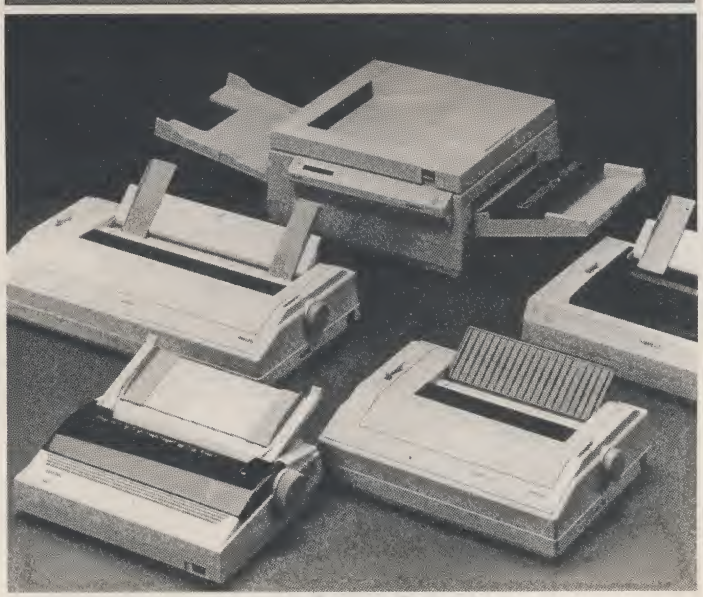
Betting, gambling and loitering

(1) No person shall enter or remain upon or use the ... bookmaking or betting or wagering or agreeing to ... ding bets with any other person but this ...

(a) premises at a station on ... bookmaker or the Horses ...

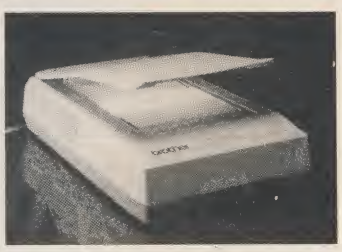
• The British Rail byelaws which give guards the power to banish computers.

A PACK OF PRINTERS FROM PHILIPS



• Philips has launched five new printers ranging from economy dot-matrix models to high-quality laser printers.

The £1,400 NMS 1481 laser printer offers 300DPI at six pages per minute and has an expandable 512K memory. There are two 9-pin dot-matrix models – the £250 NMS 1433 and the £300 NMS 1439. The 24-pin NMS 1461 and NMS 1462 cost £500 and £550 respectively. Phone 081-689 2166 for details. ■



• Not a knitting machine.

Brother branches into scanners

Brother, once best known for knitting machines and typewriters, is moving into the imaging technology market with two scanners, the BS-300 and BS-300GS.

The basic model, the BS-300, costs £1,295 and is a flat-bed with an A4 scanning speed of 10 seconds per page. It comes with *MicroArt Graphics* software for use within a Windows environment, has continuously variable input resolution, and three interfaces: Apple, PS/2 and PC. The BS-300GS has grey scales for greater accuracy.

Call Brother on 061-330 6531 for more information. ■

COMMENT

Commodore lays the jargon on thick but fails to demonstrate its CD-Amiga, so how will it fare in the fast brewing interactive CD war?

Riddle: when is a computer not a computer? The answer, apparently, is 'when it's an electronic interactive instantly accessible library and multimedia information, education and entertainment system' – in other words a CDTV.

The Commodore Dynamic Total Vision, high-ranking CBM types stressed at the Chicago CES, was not being described as a computer. The company's aim was to reach out beyond the computer literate to create a new market. And yet the machine is only a disk drive and keyboard away from being an Amiga 500 with a CD-ROM.

In other (CBM corporate comment) words, it is 'the first consumer-oriented product to combine the massive storage capabilities of the Compact Disc with the multitasking capabilities, audio, graphics, sound and processing power of an advanced personal computer into a single, simple to use affordable unit'.

Quite what this comes to, our reporter would better have been able to evaluate had a CDTV actually been on show at CES. Cagey to the last, though, Commodore kept the hardware itself hidden from prying eyes and launched via a video presentation!

The machine's specifications do, however, present plenty to chew on. The CD section represents the state of the art with CD-Graphics support. The latest records from Lou Reed and Fleetwood Mac have both been CD-Graphics discs – pictures and lyrics are included on a standard disk which plays equally well in an ordinary player. Interesting too is the ability to record sound at lower sampling frequencies than 44.1kHz – in theory that should give a playing time of over 14 hours from a Compact Disc.

Also interesting is the machine's ability to store programs and graphics on Super VHS and Hi-8 video systems. Although not widely available in this country yet, these video tape players will offer superior sound and vision quality and, it seems, CDTV compatibility.

An electronic interactive library and multimedia information, education and entertainment system

The 64K RAM card has echoes of the Neo-Geo – perhaps we will one day be able to play sophisticated games in the arcades and bring our high scores home. And the inclusion of space for MIDI sockets on the back panel at least shows that Commodore is beginning to see the importance of the music standard.

CBM's talk of moral imperatives in sharing its system may not be calculated to raise a smile, but achieves such with ease. For 'moral obligation to license' read 'need all the support we can get', for although the CDTV will be the first machine of its type to appear in the high streets, Commodore knows that tough competition is already waiting in the wings.

CDTV sets out to fulfill many of the same functions as the CD-I system currently under development. Irving Gould's "even money chance of being a *de facto* standard" recognises that while Commodore currently has the jump on its rivals, when CD-I does arrive it will have the not inconsiderable might of Philips and the two Japanese giants Sony and Matsushita (Panasonic) squarely behind it.

Whether CDTV can win the standards battle will depend very much on just how impressive the machine is in practice. We look forward very much to seeing the new baby put through its paces. ■

FROM The ARCHIVE

ONE YEAR AGO

The console war was looming on the horizon as some of the industry's big boys prepared to take up arms in the fight for the loyalty of the gamesters.

Atari was reported as stunning the games world with the surprise announcement of a small hand-held colour display games machine boasting impressive specification and earmarked as a direct rival to Nintendo. Atari boss Sam Tramiel said: "We haven't been sitting back letting profits go offshore to manufacturers who don't offer consumers value."

Meanwhile, Nintendo was happy to announce its tiny hand-held Gameboy. the Gameboy had a 2.5-inch mono screen, stereo sound and a comms link to allow two players to battle it out.

Richard Branson, Virgin boss, roving tycoon and baloonaut extraordinaire, was so taken with the Sega hardware that he signed a £100m deal with the Japanese to sell the Sega system and 16-bit Sega Megadrive. Coincidentally, Virgin Airlines was starting a Tokyo service which meant that Branson was able travel over for free in the comfort of his own airline.

The Federation Against Software Theft (FAST) celebrated its fifth birthday with a tough new campaign to curb piracy.

As well as chasing the pirates in the home and games markets, FAST planned to advertise to educational and business users in an effort to discourage software copying.

The new Copyright and Designs Act was seen as a step in the right direction in the battle to tighten up the legal aspects of copying.

With 18 weeks on the top of the software charts, *Robocop* broke the previous 17-week record set by Soft Aid. Publisher Ocean took a risk by tying up the software deal when the film *Robocop* was still at the script stage.

In the continuing computer health debate the VDU worker's rights campaign were pressing for:

- **VDU use for no more than four hours a day and no more than 50 per cent of the working day.**
- **15 minute per hour breaks away from the VDU made compulsory.**
- **Design requirements for office furniture made compulsory.**
- **Compulsory shielding of VDUs against electromagnetic emissions.**
- **The right of VDU workers to transfer to other work when planning to start a family.**

Although a hundred or so MPs were backing these proposals, a year on people still work long shifts in front of terminals and computers.

New EC proposals, however, could grant the campaigners their wishes (see page 3).

The world's fastest laptop was announced with a 25MHz processor, 2Mb of RAM and a 40Mb hard drive.

The Dolch PC from Magnerra had expansion slots covering a variety of expansion possibilities and the manufacturer claimed it was ideal for computer-aided design on the move.

Laptop it may have been, but with a weight of 20 pounds and a price tag of £7,295 it was a tremendous weight on the knees and pocket.

TWO YEARS AGO

Chain stores Woolworth, Boots and W H Smith banded together to put the pressure on software publishers. The problem was packaging.

The big three drew up specifications for what they considered 'acceptable boxes and packages'.

Commodore announced the C64 Summer Olympics bundle for just under £150. The bundle contained a C64 and ten games based loosely around the theme of the Seoul Olympics.

Fears of cheap grey imports forced Commodore to announce that it would cut the price of the Amiga A500. Marketing boss Dean Barrett said that the cheaper machine would be aimed at the 'yuppie market'.

Sources: *New Computer Express*, *MicroScope*, *Computer Trade Weekly*

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EDITOR • Martyn Lester
FEATURES EDITOR • Andy Storer
PRODUCTION EDITOR • Stuart Anderton
ART EDITOR • Amanda Cook
STAFF WRITER • Keith Pomfret
SUB-EDITOR • Ian Pemble
DEPUTY PRODUCTION EDITOR • Ben Feinbaum

CONTRIBUTORS:
Rob Ainsley • Maff Evans • Steve Carey
Simon Williams • Robin Alway • Andrew Brown
Keith Neal • Jason Holborn Bertram Carrot
Rod Lawton • John Torofex • Pete Gerrard
Mark Higham

ADVERTISEMENT MANAGER • Mark Salmon
AD EXECUTIVES:
Simon Moss • Helen Kirkhope • Sophie Eades
AD ADMINSTRATION • James Leach
AD PRODUCTION • Frances Wasem
AD TYPESETTING • Terry Turner

ASSISTANT PUBLISHER • Jane Richardson
PUBLISHER • Greg Ingham

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CPC

KLAX 1: TETRIS 0!

Who remembers *Tetris*? Who still plays *Tetris*? Admittedly its CPC incarnation was little short of dire compared to the others, but it still represented a milestone in gaming. Here was a game that didn't involve blasting swarms of alien invaders, didn't have you clearing the New York streets of low-life, didn't even cast you in the role of a do-gooding arch-mage out to save the universe. In short, it defied every single gaming stereotype – and sold in its thousands.

Well, I'll say it here and now. Domark's new arcade puzzler *Klax* is better than *Tetris*.

Both games feature an addictive blend of puzzle-solving, pattern-finding and lightning decision-making. Both have you trying to form specific arrangements with blocks that fall at ever-increasing speed. Both make you come back again and again to a game you know you can never win.

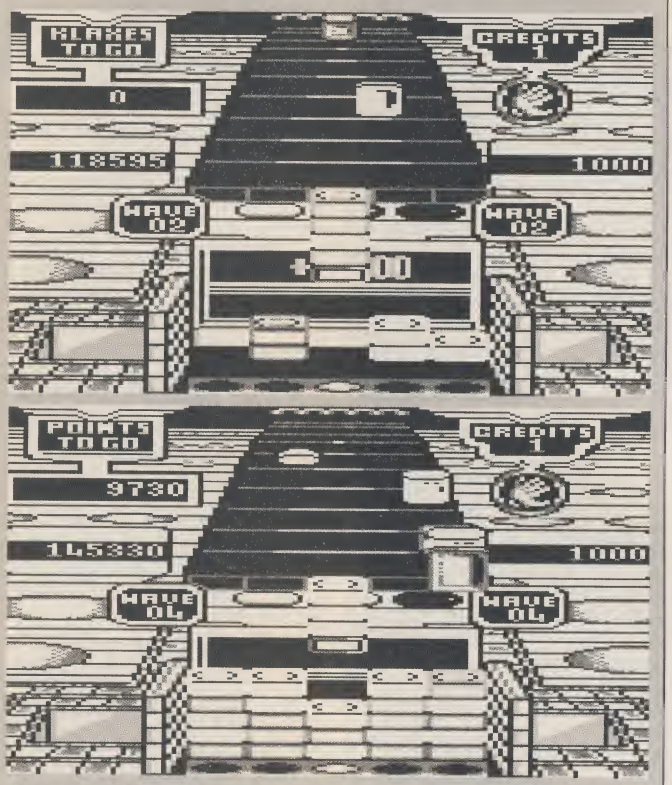
While *Tetris* was based on filling the spaces with different-shaped falling blocks, *Klax* has more in common with the game Connect-4. Tiles slide toward you from the top of a sloping table, and it's your job to catch them on a small paddle you can move from side to side. Move the paddle to where you want the tile to fall, press the fire button and there it goes.

Underneath this paddle is a grid five tiles wide and six high. The tiles come in several different colours, and your aim is to form horizontal, vertical or diagonal lines of three, four or five tiles of the same colour (a Klax). Those tiles then disappear, and you start the process over again.

As with *Tetris*, your aim is to stop those tiles piling up to the top – if they do you lose a life. And, as with *Tetris*, the longer you keep going, the faster those tiles appear. Which doesn't really give you much time to decide where to drop them. And it really does matter, because once they're dropped there ain't no picking them up again ...

Fortunately, your paddle can hold up to five tiles while you're deciding. This gives you valuable breathing space in which to plan your strategy. It also adds yet another potential source of panic as the little devils pile up on your paddle faster than you can decide where to dump them. Whatever happens, you see, you mustn't let any of the tiles slide past the paddle. Depending on the level, you get no more than three to five drops before you're dead. Mind you, with three lives, *Klax* is fairly forgiving – in *Tetris*, your first mistake tends to be your last.

If *Klax* is less punishing than its Russian counterpart, it's also more varied. Whereas in *Tetris* all you had to do was fill the spaces, in *Klax* your objective depends on the level. You may have to get, say, 15 Klaxes of any description to advance to the next level, or you may need to score 10 horizontal Klaxes. Or you may have to score 25,000 points however you can. Each objective casts its own slant on the game. Since some varieties of Klax are far more difficult to achieve than others, they accordingly score far more points. If all you're trying to do is score a set number of Klaxes you should go for the easy ones, while if you're after points, one big score could see you through.



• Klax *is even better than* Tetris!

It's this tactical variety, *Tetris*-like addictiveness and sheer playability that makes *Klax* such an excellent game. To my mind, it's the best bit of software since *Laser Squad*. Bar none. It's £9.99 on tape, £14.99 on disk and worth every single little penny.

SERIOUS DEVELOPMENTS

One of the main things standing in the way of the CPC as a serious business machine is its lack of PC-compatibility. For example, apart from rigging up a serial link there's no quick way of getting text files written on a CPC on to a PC or vice versa. And if you've got a CPC at home and a PC at work, you'll need a pretty flipping long lead!

Not only that, the CPC is still stuck with its weedy 178K-per-side 3-inch disks, and neither does it have access to hard drives like PCs do.

Siren Software is one of the CPC's staunchest supporters. It's just launched a CPC-PC file transfer utility for use with its external 3.5-inch disk drives, and I'll be giving that a once-over just as soon as I can get my hands on it.

In the meantime, though, Siren's boss Simon Cobb, has altogether more ambitious things in mind. Plans are still at the sketchy stage, but it seems Siren has developed a 20Mb hard disk drive, interface and software for the CPC. The company already has a prototype up and running, but has still to decide whether to sell the product commercially or not.

"It's the price that's the problem," says Simon Cobb, Siren's boss, "at the moment it looks as if it would cost around £500."

PC hard drives are a couple of hundred pounds cheaper than that, but that's mainly because so many of them are built. If £500 sounds a lot, though, just bear in mind that the equivalent in floppy disks (60 of the little devils!) would cost £180 – and would still have to be carefully organised so that you know where every files is. With a hard drive, you can keep all your favourite programs and files in one place. (Not games, though, since the protection would stop you copying them over.)

Whether or not Siren does release the hard drive remains to be seen. Let's hope so!

CHEATING ORGY

There's just time for a little tip for Dinamic's *Navy Moves*. This Spanish shoot-'em-up comes in two parts. You only get to play the second part if you finish the first – and that's tough. Which is why you might like to know the password for Level Two, maybe? The password is 28750. And where did that crucial snippet of information come from? *Cheat Mode II – The Revenge*, the crucial games playing companion for cheaters everywhere, is now out.

130 pages crammed with hints, cheats, tips and pokes from 33 issues of *Express*'s sister mag *Amstrad Action*, from issues 17-50. Price is £9.99 for the book only, £11.99 for the book plus cassettes containing all the pokes to save you typing them in. Don't delay – add £1.45 for postage and packing, and send your order to: *Amstrad Action* Cheat Mode Book Offer, Freepost, Somerton, Somerset TA11 7BR.

Rod Lawton

YOUR FORMAT

CPC 9
Spectrum 10
SAM Coupé 10
PCW 10
MSX 10
QL 11
BBC 11
Archimedes 11
C64 11
ST 12
Amiga 14
PC 16

SPECTRUM

DRIVE, HE SAID

Hat's off, three cheers and lots of back patting for Datel Electronics, the mail order hardware specialist who's had the good sense to start selling the excellent Plus D disk system. This disk drive and interface package was originally designed by MGT and the quality of the product was responsible for building up the company that gave us the SAM Coupé.

When SAM finally appeared there were a few worries that this top hole Speccy add-on might be doomed to fade into obscurity but MGT, wise as ever, has sold the whole thing to Datel which is now giving the product the kind of attention it deserves.

In case you don't know, the Plus D is an interface and disk drive system that does away with those old fashioned tape recorder things once and for all. It replaces your mangy, pre-neolithic cassette deck with a gleaming, industry-standard, double-sided 3.5-inch disk. As well as connecting such a high tech piece of kit to the Speccy, the Plus D interface also includes a 'snapshot' feature which stops programs in their tracks and saves them to disk. The price of asking is a reasonable £129.99 or the Plus D interface can be purchased on its lonesome for one pence off 60 quid. Get more details with an SAE sent to Govan Road, Fenton Industrial Estate, Fenton, Stoke-On-Trent ST4 2RS.

CLIP JOINT

If you've seen clip art on an ST or Amiga and sighed to yourself, thinking such wondrous things would never be available for the humble Speccy, you're wrong – because the people at Garner Designs has got two disks full of the stuff. Called, maybe a tad uninventively, *Clip Art 1* and *Clip Art 2*, each disk holds a large selection of 'Border Art' for you to incorporate into documents created with PCG's *Desktop Publishing* package. £6.95 is the price of each disk and you can get hold of a copy or more details from 57 Lovers Walk, Dunstable, Beds LU5 4BG.

Incidentally, Garner Designs is planning a "budget word processor with full price features" for the Speccy called *Prestige Word*. More details when somebody tells me about it.

TAKING THE MIKTOR

Here's a few pokes for you courtesy of the prolific, mysterious and awesomely talented Miktor. It's just a pity he's got such a crap name, really. The latest hapless game to yield to his power is *Postman Pat II*, which thanks to Miktor you can play with an everlasting supply of tea. Apparently this is a very useful thing to have. To get eternal quantities of said beverage, simply type the listing into your Speccy, Run it and start the game tape from the beginning. And when you're clocking up unfeasibly high scores remember to thank good old Mr Miktor!

```
10 REM POSTMAN PAT II
(INfiNITE TEA!)
20 FOR N=23440 TO 23470: READ
A: POKE N, A: NEXT N
30 PRINT "START TAPE"; USR
23440
40 DATA 221, 33, 203, 92, 17,
157, 0, 62, 255, 55, 205, 86
50 DATA 5, 48, 241, 33, 168,
91, 34, 32, 93, 195, 208, 92
60 DATA 175, 50, 97, 193,
195, 3, 128
```

Thought I'd better remind you lot that Speccy tips, pokes, wrinkles, comments criticisms, things to plug or anything in the least bit Spectrum-esque are welcomed by me, Robin Alway at *Express*, 30 Monmouth Street, Bath BA1 2AP. !

Robin Alway

SAM COUPE

SAM SCAM

While you and I are still working out how to plug the thing in, people like Derek Morgan of Lancashire already have an intimate understanding of their SAMs. He showed this last week with his second group of unlisted function keywords and now, as promised, here's a short but nifty listing he sent me. It gives anyone bothering to bash it in, a black pen on white paper colour scheme that's sure to bring back hazy Speccy-using memories.

```
10 REM CHANGE KEYWORDS
20
30 DEF KEYCODE 204 LOAD:
40 DEF KEYWORD 205 SAVE:
50 DEF KEYWORD 206 DIR 1:
60 DEF KEYWORD 207 DIR 12:
70 DEF KEYWORD 208 BORDER 15:
PAPER 15: CLS: PEN 0:
80 DEF KEYCODE 209 DEVICE D1:
90 DEF KEYCODE 210 DEVICE D2:
100 DEF KEYCODE 211 DEVICE T;
110
120 DELETE 10 TO 140
```

The program is saved with an 'AUTO' and when loaded and run, the DOS is Booted (F9 Dos Version 1.3). It also deletes itself after running. As well as eternal thanks, Geoff will be receiving a free piece of SAM software for his two great tips. If you've got any Coupé hints, pokes or short routines send them to me at the usual address.

TURBO

Good to see the first Coupé fanzine, *Turbo*, is still going strong. The fourth issue has just reached me and it's pretty good stuff with 20-odd pages of Coupé information, tips and reviews. The layout could do with a little more attention but each page positively throbs with enthusiasm and a promised interview with Dr Andy Wright sounds promising. *Turbo* costs £1 an issue from Adrian Betts, 8 Healey, Lakeside, Tamworth, Staffs B77 2RP.

Robin Alway

PCW

FOOD FOR THOUGHT

One of the oddest new programs for the PCW I've seen recently must be the *Diet Menu-Maker* from North Micro Laboratories (03668 274). You answer a few questions such as whether or not you eat pork, or are vegetarian, and so on. The program then suggests a set of seven menus to the calorie intake you specify.

Good fun but a bit overpriced at £30 – as is so often the case with 'novelty' PCW software, there are cheaper and better alternatives called books.

SEE YOU ANON

It was the pop group America which had a hit in the 1970s with *A Horse With No Name* (subtitled *A Song With No Tune*). I always thought this would present problems for the bookies if it raced in the National. Well, in *Protext* you can save a file which has no name: just save it as B: (or A: or M:). You can load or erase it in the same way, but not copy it. I can't think of a single sensible use for this but there you are.

CLEAR THINKING

Users of the excellent desktop publishing program *Micro Design* might be interested in *MD Cleartext*, a bolt-on package that adds several new fonts (and with Spanish, German and French characters too).

Great value at £13.50 and a neat way of making your desktop published work stand out from the crowd. Details from Exemplar Design on PO Box 683, Bath BA1 1XU.

MARGINAL IMPROVEMENT

If you want a document printed out in a different pitch to normal, changing the pitch isn't enough – you need to change the margin settings as well. Here are the suggested margin positions for the five pitch sizes on A4 paper.

Pitch	Left Margin	Right Margin
10	07	73
12	09	89
PS	09	89
15	11	110
17	13	127

Change the margins in TEMPLATE.STD so that any further documents created in that group will have the same settings automatically, as follows. First edit the document, then:

Loco 1: Press [f7] then [ENTER] then [f7] then [f1]. Set the pitch to the required figure – type 17 for 17 pitch and so on. End with [ENTER]. Set other options in the line as required – italic, justify and so on. Cursor down to the ruler line. Move the cursor to the required left margin setting indicated above appropriate to your pitch and press [f1], then to the right margin setting and press [f2]. [EXIT] and [ENTER] back to the main document.

Loco 2: Press [f2] and select 'change layout'. Set size from [f4] 'size' menu. Move to appropriate position for left margin and press [f1] then [ENTER]. Move to position for right margin then press [f1] and select 'Right margin' then [ENTER]. [EXIT] and [ENTER] back to main document.

Rob Ainsley

MSX

GAME GLUT

I do wish that software houses wouldn't advertise games until they are actually available. Many titles that were advertised months ago are only now becoming available on the MSX format. This of course means that all of a sudden there is a wealth of software to choose from, and as sales of software on all formats are usually quiet at this time of year, it will come as no surprise if some of these companies fail to sell the number of games that they expected to – especially on a minority format like MSX.

Titles that should have been available ages ago, but are only now appearing on the retailers shelves include, *Space Harrier*, and *Scramble Spirits* from Grandslam, *Klax* from Domark/Tenegen and *Manchester United* from Krisalis software. Also soon to be available from Krisalis is a game called *Rogue Trooper*, although no release date is yet set for this title.

One game that unfortunately is no longer available from its producers is *Xenon* by Melbourne House, so if you were thinking of buying a copy, check with your retailer that they still have copies in stock before parting with your cash. I suppose it is good that a software house actually sells out of copies of a game on our format

POCKET MONEY

Regarding pocket money software, it's good to see that Players is still producing games for the MSX, with its latest release being a game called *The Race*, a copy of which is heading my way courtesy of Capri Marketing (Thanks Richard). A review will follow shortly.

Captain S is a budget game, priced £2.99, and is released on the Winner label by Alternative Software. I've recently given this game the 'once over', and here are my impressions. Firstly, although the cassette label gives you the impression that this game is a beat-em-up, *Captain S* is more of a platform type game, with objects to find, and baddies to avoid, or destroy, if you have the power to do so. The game is a two part affair, the first section is set in the town, and Captain S has to locate a rocket that will take him to part two of the game, the planet Lobster. As I failed miserably in my attempt to reach stage two of this game, all my impressions will have to be based on the first part. The graphics are reasonable for a budget title, although we have another case of a Spectrum lookalike in this department.

Gameplay is simple, with each screen being flipped to the next when completed, just like the famous *Jet Set Willy*, (I had it but the cream cleared it up). You start the game as humble Mariano, and only by collecting sausages can you become Captain S. Your available powers, eg supershoot or superjump will be displayed in the selection square. I found the game extremely difficult to master initially, but on persevering, quite enjoyed the challenge. Each screen needs to be completed in a set way, and it is fun trying to figure out the sequence needed to complete each section. £2.99 isn't much to ask for a game, and *Captain S* is worth every penny of this asking price.

Keith Neal

C64

ANOTHER DESERTER?

Having lost Level 9 from the world of adventure games and the 8-bit computers that made their name, have we also now lost Magnetic Scrolls? Its new game, *Wonderland*, is due for release any day now, and my spies tell me that it does *not* contain text input and that it will *not* be available for the Commodore 64. Write to MS in your millions and complain! You can do this by writing to Anita Sinclair of Magnetic Scrolls at 1 Chapel Court, London SE1 1HH

AMAZE ME

If you hate mazes in adventure games as much as I do, then here's a quick route through the underground maze to the key and the coins in Infocom's celebrated *Zork I*. Go down through the living room trapdoor, then north, west, west, up. Get the key and the bag and under no circumstances should you get or even think about getting anything else.

To return you'll have to go north, west, south, east, south, and up. That's the way to do it!

PUT A POKE IN IT

Due to the Post Office managing to lose last week's column somewhere between Wigan and Bath, I had to dictate it all over the telephone (and I hope Sally Newman's shoulders have recovered from attempting to balance a telephone while typing!). This wasn't too disastrous apart from one section. This one. Half a dozen Pokes, some lengthy, get very confusing after a while, so just in case the Post Office get things wrong again, there's only five this week. They should still manage to keep you going until the next column.

Cheat modes abound, so on *Park Patrol* you'll have to POKE 26700, 191:SYS 2076. On *Rygar* you'll have to POKE 9551,165:SYS 2325. On *Space Harrier* you'll have to POKE 6010,173:Sys 2128. On *Living Daylights* you'll have to POKE 4390,238:SYS 4352. And finally for this week, on *Last Mission*, you'll have to POKE 7927,12:SYS 14848. Please, Mr Postman, don't lose this one as well!

WIGAN AGAIN

All roads lead to Wigan, or so it seems this week. After seeing it I just had to include another tip for the game *Ghouls 'n' Ghosts*. When you get your name on the high score table, enter it as 'Wiganrlfc' (no spaces). Then hit the 'A' key to get your armour back, and the 'S' key to get to the next level.

As any rugby follower should know, Wigan Rugby League Football Club have won everything worth winning this season, so it's only appropriate that they should allow you to whizz through a game just like they do.

And if adventure fans are feeling left out, the password for level 2 of *Bored of the Rings* is Acht!, and the password for level 3 is AC-18130. Any more, you adventure nuts out there?

Pete Gerrard

QL

ALL FORMAT FAIR

The third All Formats Computer Fair takes place this weekend, Saturday/Sunday, at the New Horticultural Hall, Westminster. Quanta, the QL users group, will be attending as usual, and there should be lots of other stands flogging QL hardware and software.

The second International QL Meeting will be held in Schloss Bedburg (West Germany) on June 23. The meeting last year proved very popular, and quite a strong British contingent attended. Unfortunately, this year a meeting clashes with a Quanta workshop, so there won't be so many people from the UK participating. Overnight accommodation is available, as well as a campsite.

If you would like more information, contact Franz Herrman, Talstrasse 21, D-5460 Ockenfels, West Germany. Tel: 0049/02644/1855.

SUPER DUPE

If, when writing a SuperBASIC program, you need to duplicate a line, you can save a bit of typing by using the following technique.

Simply Edit the line to be duplicated, backspace to the line number, and change it to the line number where you want the duplicate to be located. If anything in the statement needs changing, do it now. When you press Enter to terminate the Edit process, you will find that the original line will still be there., and the duplicated line, with changes, will have appeared in the desired position.

CLONING

Quanta co-founder Leon Heller has come across a couple of chips that would considerably simplify the design of a QL clone.

The Philips PCB68070 has been available for a couple of years, and is a highly-integrated variation on the 68000. Philips has just announced a companion to the 68070 – the SCC66470 video and system controller (VSC). The VSC replaces some 30 devices that are needed to build a 68000-based computer with high-resolution colour graphics, and can handle up to 1.5Mb of RAM and 512K of ROM, directly.

With these two chips, plus disk controller and keyboard controller chips, a handful of DRAMs, and a few other bits and pieces, a QL clone could be built with an eight or 256 colour 768 x 560 resolution display.

The VSC includes a blitter, and with the 68070 running at 10 MHZ, a very high-performance system could be cheaply constructed, (25 per cent faster than the Amiga A500 or the Atari ST, with better graphics). The Minerva QDOS replacement could be ported to the proposed system without too many problems.

The Proposal has been written up for inclusion in the Quanta newsletter. It will be interesting to see what sort of response ensues.

John Torofex

BBC

ART MACHINE

Meanwhile, seven years on from being Chris Curry's brainchild, the Beeb is being featured up in Glasgow, European City of Culture 1990. Educational software house Topologika have written five brand new Concept Keyboard based programs on maths and art, including fractals, transformation and recursion. The computers will form part of The Art Machine, a new approach to exhibitions which builds on the example of children's museums in the USA. The Art Machine is on at the McLelland Galleries Glasgow from June 2 and runs until August 28.

QUICK AND DIRTY

On the subject of moving files across filing systems, I've received a simple tip for small to medium sized files, which should be especially useful on single drive systems. Simply use your word processor as a memory buffer. Load the file into *Wordwise* – or read it into *View* – change the filing system accordingly and then resave or write. Quick and dirty but it works!

CURRY'S HOT SHOPPERS

It's back to the Acorn brochures of the early 1980s and Chris Curry is going to revolutionise our lifestyles with his Keyline Shopping company.

Chris aims to have more than 500,000 wired up with his shopping computer by 1992. It will act as a terminal on the cable network which will soon be beaming not only Sky and BSB but also Sainsburys and M&S!

Andrew Brown

ARCHIMEDES

A3000 TRUE VALUE

Why is it that the A3000 Arc is perceived as a high cost computer, when the Amiga 500 and ST1040 are seen to be much better value? Let's compare them item for item. All three machines have the same basic shape, a wedge with a keyboard at the front and a 3.5-inch drive in the side. The Arc and the ST each have 1Mb of memory, while the Amiga only has 512K. The Amiga also has an external power supply which has pros and cons but overall makes the installation more cumbersome than the other two.

Both the Amiga and the ST are based on the 16-bit Motorola 68000 chip, running at 8MHz. This is a very useful chip and in each case supports custom-written chips for handling sound and graphics. Both machines are capable of producing high-quality graphics in lots of colours and processing them fast enough for some spectacular games and powerful business applications. The Arc uses the 32 bit ARM chip, running at 4MHz. This, as we know, is a reduced instruction set chip (RISC) processor capable of pretty phenomenal processing speeds and again married to custom video and sound chips to produce high-resolution graphics and eight channel stereo sound.

The operating systems of each of the three machines offer WIMP interfaces to ease file housekeeping and peripherals management. The ST offers GEM, which does the business, but is a little simplistic and dated in operation. It can only run one task at once, though others can be loaded as desk accessories and 'context switched' over other applications.

The Amiga's Intuition interface does multitask, though the half megabyte of available memory limits the number of applications that will fit. There are still a lot of packages which cause the Amiga to fall over, as well, though I'm told the situation is improving. The interface itself is reasonably designed and works quickly.

The Arc's operating system, RISCOS, like the ST's, is held entirely in ROM, is fully multi-tasking and is, if it's possible to give an unbiased opinion, one of the best WIMP interfaces available on a micro. It's solid, fast and has a consistent control structure.

So far the Arc holds up pretty well against the other two machines, giving more power, similar or better hardware and a practical and attractive operating system. The crunch still comes with software support, though. While it's true that there are offerings in most fields on the Arc and that more and more software is appearing for it, there is still often only one choice in a given field. Until more software hits the streets, the extra £250 looks expensive. A fast machine it is, but most users if they're honest look to the future to fully exploit its potential.

ARCHIE FAIR

A reminder of the Cambridge International Software Archimedes Summer Fair, mentioned before in this column. It's due to take place on June 16 and 17 (Sat and Sun) from 10 in the morning until five at night. It will be held at 8 Herbrand St, London WC1N 1HZ and there will be "100s of Archimedes products, Hardware, Software, Consumables, Demonstrations and Seminars" on show.

Bertrum Carrot

ARC CAN DO?

At the risk (or should that be risc?) of opening myself to 'Why don't you read the manual?' letters, I'd like to know if you can do any of the following easily on an Arc.

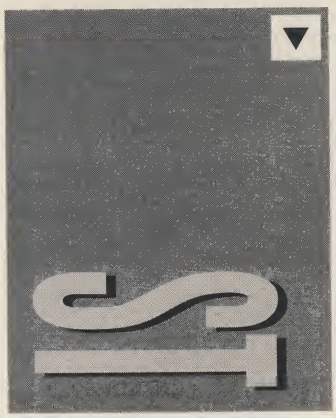
1. Select a block of files from a directory window by stretching a 'rubber rectangle' over them.

I appreciate that you can select a number of files using the shift-click technique, but it would be good to be able to select them in true WIMP-style fashion, too.

2. Create a full screen sprite and lay it down as a backdrop for the RISCOS desktop?

This is possible on the ST, Amiga and on the PC under Windows 3, and it would seem an attractive option on the Arc.

3. Add sound effects to specific RISCOS functions, *à la* Mac, and have monkeys squeaking when you run an application, or whatever?



MEGAPAINT EXCITEMENT

Much excitement is being caused by the announcement from Silica Systems that *Megapaint II* is about to be launched. It's the very first graphics package that works at the same resolution as your printer. Therefore the program uses a screen pixel to printer point ratio of 1:1, offering unrivaled screen quality.

"It not only looks better," says Silica's Andy Leaning, "it *is* better than the competition." Its high speed, according to Leaning, is the result of the optimising of the internal coding, producing "lightning fast" operations. Certainly print times and commands are very impressive, if they live up to Silica's claims: with the Atari laser, for instance, printing a full A4 page won't even take up three seconds of your time!

One obvious application for *Megapaint* is as a partner for a DTP package. It's compatible with *Calamus*, the ill-fated *Pagestream*, *Touch Up* and all packages that support Degas and IMG file formats. And a further piece of good news is the price. Original reports suggested that it would sell for £150, but in fact it's going to come in at £99.95.

Get in touch with Silica on 081-309 1111.

HOW TO BE THE MASTER

Regular readers of this column (you are? I'm very pleased for you) will undoubtedly remember me foaming at the mouth and quivering with anticipation over Incentive's latest Freescape epic *Castle Master*, the first of the four game series written on 16-bit machines. It lived up to expectations handsomely, I felt, and many of you have written in to agree.

One such is Derek Griffiths of Faversham in Kent, who begs to take issue with me on one point. "Steve's review was, as usual, pretty accurate," he observes, for which much thanks. "But he was wrong in one thing. He reckoned even the hardest gamester would need at least a week to finish. I am by no means such a one – *Dungeon Master* took me many months and a cheat book to complete – but I managed to finish *Castle Master* in two days!"

How? Well, I don't want to, as it were, give the game away completely. But a here's a few of Derek's tips for battling through to the bitter end.

Five of the ten pentacles are in caverns within the catacombs. You need therefore to return to level one via the cellar steps five times in order to find the cleverly hidden 'entrance holes'. It's a good idea to visit each cavern in turn after the first pentacle to destroy the spirits – you won't, however, be able to reach any more pentacles on this first visit due to the 'one way' steps.

Of the five cavern entrance holes two are hard to find – one's under the mat in the wizard's hut, while the other is under the large rock outside the castle. To move the rock, however, you need Herculean Strength: enter the castle, go to the kitchen in the SE tower and walk through the fireplace to the larder, where you find plenty of titbits.

Another tip: to save time and effort visit the pottery on level two (you need Herculean Strength to open the heavy door: see above). Here you'll find a potion which gives your stone-throwing magical properties. You'll henceforth be transported effortlessly through most doors and windows at which you aim a stone.

HOT CHILI BURSTS OUT

Atari fans have been astonished by the dazzling colour display of the new STE, with its 16 colours on-screen and whacking great 4,096 palette. Naturally it's taking a while for software for the new machine to come through, but come through it most certainly will.

STE owners, however, may care to avert their gaze for a few moments. Why? Because Signa has just let news break of an astonishing new professional desktop video package called Chili. It's as hot as its name suggests, too, offering an incredible 256,000 colours on-screen (but don't ask me to count them!) from a palette of – wait for it – 16,000,000!

More than that, the new system enables the user to achieve real-time colour frame grabbing and borderless genlocking. Naturally there's an art package thrown in, which runs at incredibly high resolution and offers effects such as merging, overpainting, masking, block manipulation, filtering, title generation and distortion.

The fascinating thing about Chili is that, although it sounds expensive (£1,800, give or take a few quid), its specification has hitherto been unavailable on the ST. It runs at broadcast quality, for example, and should therefore be of particular interest to TV and video companies. It can be linked up to a video camera or a scanner so that colour images can be scanned in and edited, either in real-time or afterwards.

Sounds quite a beast. If you have the price of Chili in spare cash you should be talking to Signa on 0252 341600.

STE owners may now rejoin us.

THAT MYSTERY SOLVED

And while we're on the subject of *Castle Master*, Incentive's action-adventure provides the solution to a mystery other than its own. Half-a-dozen readers have very kindly written to offer me their support in my time of crisis, which started when I decided to check out Mel Croucher's Computer Fun Line (0898 299399, if you can afford it). Little did I suspect that your correspondent would be chosen to be the recipient of a vicious tirade of abuse from merry Mel. "Welcome to Fun Line," it began, all friendly and smiling, "unless your name is Steve Carey, in which case **** off!"

I was shocked, boys and girls, shocked and dismayed. What could I have done to deserve such treatment, I who had never even spoken to the man? Eventually I deduced that the only possible cause for such an unpleasant torrent of filth was my not entirely complimentary remarks about the manual to *Castle Master*, which, if I recall, I dismissed as "not perhaps up to the usual high standards we have come to expect from the astonishingly gifted Mr Croucher."

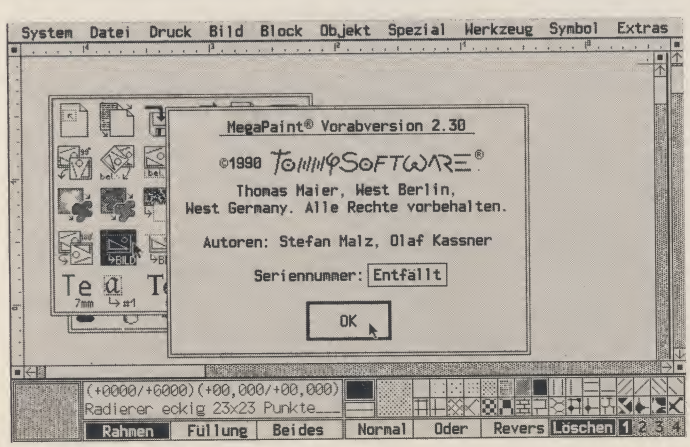
NEW CHIPS FOR OLD

There was a fascinating story in last week's *Express*. Apparently the Russians are so keen to get their hands on STs that they're swapping their Dynamic Random Access Memory chips (DRAMs, as they're called) for them. This is good news for Atari, since there's been a world shortage of these little beasties for a couple of years. More importantly it's great news for the Ruskies, who have until now been deprived of high tech machines such as STs.

THROWN OUT OF PALACE

One of the best games of recent times, *Future Wars*, came from French operation Delphine. The next release is *Operation Stealth*, a kind of rootin' tootin' adventure-type thingie. But Delphine and Palace, the UK distributors of *Future Wars*, have had words. Palace is muttering about "creative differences" and it's now not at all sure that *Operation Stealth* will appear here courtesy of Palace.

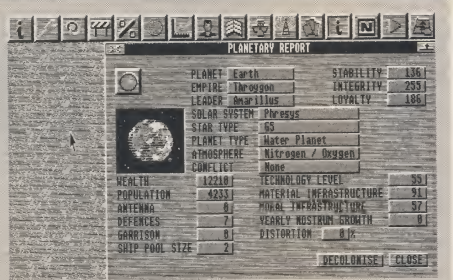
Steve Carey

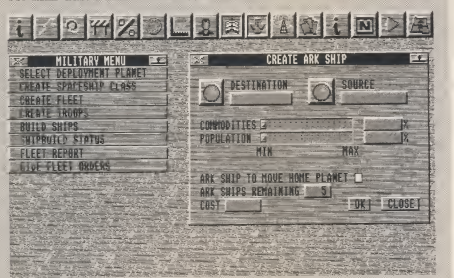


• *It's hot and it's here:* Megapaint II.

IMPERIUM

ST GAME of the WEEK





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We've seen an enormous variety of space trading games over the years and some have even managed to make it into the history books. *Elite* has been talked of as the ultimate space-trader but there have been worthy follow-ups. *Starflight* appeared only last month for the ST but it has been a hit on other formats for years.

***Imperium* is now poised for release and it should certainly pose a serious threat to the big boys. It's a game very much in the mould of *Elite* and *Starflight*, except without the pretty pictures. It's an intensely strategic game but the way it has been designed means there are no limits to the winning scenarios.**

Your job is to build up supplies of a life-preserving drug as you rattle through the game taking over planets and designing and inflicting policies. Success can be achieved in two ways – either by taking control of all the planets or surviving for 1,000 years (the hardest of the two).

The game is played on a main screen which presents a row of 16 icons. These enable you to do all your pilfering from promised lands and formulate strategies. Unfortunately, you need to watch your step. You rule an army of people and if you upset them they can vote you out of office.

***Imperium* is split into three very distinctive areas – politics, military and economy. The economy side is certainly the most important but it affects the other two categories as well. It's important to bear these three areas in mind when you make decisions. Make the wrong moves and you can lose your position as leader. Qualities like these make *Imperium* score very highly but, without the kind of creative visuals which we've seen in other space-trading games, it doesn't have the same appeal – particularly if you're a fan of explosive graphics. Because the game lets you go anywhere and do anything, when the front screen first presents itself, it can seem very daunting. The manual details the actions of the icons but it is little help in setting you on right track.**

Mark Higham

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MAC ATTACK

I remember the headlines; A-Max has arrived! At last you can run Mac software on your Amiga. That's what they said – but the reality was very much different. OK, A-Max would happily emulate a floppy disk-based Mac Plus, but even then quite a few packages refused point-blank to run. However, the real disappointment to end them all was undoubtedly the lack of hard disk support. Although such things aren't really a necessity on the Amiga, a Mac is practically unusable without one.

The good news is that A-Max 2 has arrived. Pencilled-in for a late July release, the device consists of a card that fits internally within the Amiga 2000. Although no plugs have been announced to produce a version for the A500, the board should work fine with Checkmate's case conversion kit, the A1500. Not only does this latest release provide full support for hard drives (yippee!), but it will even allow you to read and write Mac disks in standard Amiga drives (yippee! again).

'So what's so special about that?', I hear you ask. Well, the Mac drives work somewhat differently from Amiga drives. Instead of running at a set speed, the Mac drives speed up and slow down depending on which part of the disk is being accessed. Just like HiSoft's Spectre GCR Mac emulator for the ST, A-Max 2 will now let you read and write disks in GCR format using previously incompatible disk drives.

As always, I'll bring you a full review as soon as A-Max 2 lands in the UK. For more information, give Entertainments International a call on 0268 541126.

GAMES NEWS

Psygnosis' *Shadow of The Beast* caused quite a stir when it was released late last year. The combination of arcade-quality visuals, movie-like animation and earth-shattering sound spelled success for the the Liverpool-based software company.

For all of you *Beast* fanatics who just can't get enough of that loveable horned character, Psygnosis are soon to release the follow up in the form of the imaginatively named *Shadow Of the Beast II*. No details are yet available, but Psygnosis promises that the game will certainly not be a let down for *Shadow of the Beast* fans.

As a sideline, it's interesting to note that ST owners will soon be able to get their hands on *Shadow of the Beast*. For a game that pushed the Amiga hardware further than anyone has ever taken it before, it's certainly going to be interesting to see how well the game converts (cue Wayne Smithson, perhaps?).

Following on from the recent release of the hit thriller, *Hunt For Red October*, Grandslam has decided to re-launch the computer game in time to catch a new tide of interest from movie-going computer users. The company also plans to produce a brand new game based around the original book.

How many of you have been lucky enough to play the new *Aliens* coin-op machine that is currently taking the arcades by storm? If you haven't seen it, then you just don't know what you're missing – the game captures the tense atmosphere of the original film while still managing to deliver some of the best gameplay this side of *Tetris*. Unfortunately, no one seems to have snapped up the conversion rights (are any of you software houses listening?).

Look out for Thalamus' next release, *The Team Q8 Ford Rally Simulator* which puts you behind the wheel of a certain computer journalists' dream car, the Ford Sierra RS Cosworth (anyone got one they don't want?). The game lets you experience the thrills and spills of driving Ford's flagship rally car through three treacherous rallies. Utilising the latest 3D graphic techniques, the game looks to be a goodie.

IT'S AN AMIGA, SPORT!

Funny how the Amiga seems to pop up in the most unlikely of places. After making a guest appearance in ITV's *Ghost Train* (starring that multi-talented celebrity, Nobby the Sheep) and even playing one of the leading roles in the recent cinema hit, *The Rachel Papers*, keen eyed Amiga watchers may have noticed the presence of an Amiga 2000 in ITV's latest afternoon children's programme, *Rolf's Cartoon Club*.

The programme, hosted by everyone's favourite Australian, Rolf Harris, includes a regular 'animation workshop' which is designed to introduce children to the fundamentals of animation. One of the tools available to the children is an Amiga 2000, although the poor machine rarely seems to be used (shame on them!). Comments about the TV viewing habits of *Express* journos will not be appreciated!

BOB'S YER UNCLE

If you are a basic programmer and you're interested in getting the most out of the Amiga's graphics system, you've probably experimented with sprites and BOBS. AmigaBASIC comes with a utility called the 'object editor' to help you design these useful little mateys.

The standard version of the object editor only offers four colours on screen at once (which is hardly enough to design eye catching sprites for your DIY games). However, if you have enough RAM (1Mb at least – although standard 512K A500 will happily run an eight colour version of the object editor.), it is possible to increase the number of available colours, thereby allowing you to create BOBs containing up to 16 colours! These extra colours are limited to BOBs only, as sprites are limited to four colours.

What you must do is to edit the object editor program (it's written in AmigaBASIC) to remove the comment markers from a few vital lines so that the AmigaBASIC interpreter actually runs them (don't worry, they're easy enough to find!).

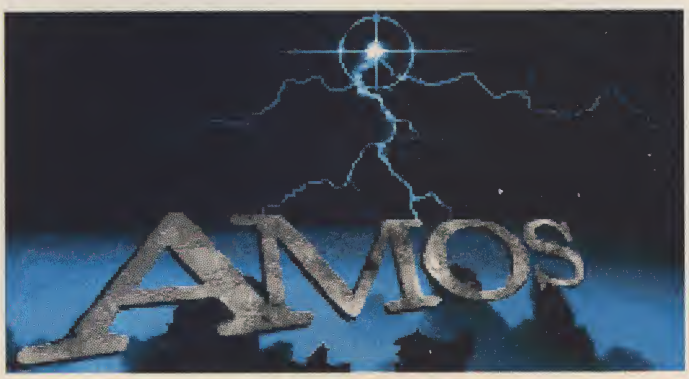
To increase the colours from eight to 16 just edit the line that reads Depth = 3 to read Depth = 4. This increases the number of bitplanes to four, therefore giving the required number of colours.

AMOS IS HERE!

Yes folks, the program you have all been waiting for has arrived – Mandarin's AMOS has surfaced from the depths of vapourware to finally become a reality.

Check out next week's *Express* for an in-depth look at what has been described as the most important games-related product release ever (if I manage to pick my chin up off of the floor in time!).

Jason Holborn



• It's here at last – watch out for an AMOS review next week.

PLAYING TIP

NINJA WARRIORS

By pressing Caps Lock and typing in a whole host of messages, certain 'special effects' can be found. But the most useful effect is infinite lives. So what is it? Well just type CHEDDAR and see what happens.
Pieter Browse, Netherlands

THEME PARK MYSTERY

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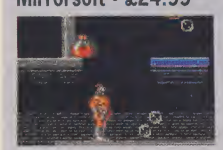

Everyone likes theme parks, they're such fun places. The rides, the shows, the games – wouldn't it be wonderful to own one? That's what your grandfather thought, so he set up one of the most successful theme parks around – Magic Canyon.

All went well for many years, until one day he unearthed something in the park that sent him completely insane. The family have made sure that he has the best of care, but he is only a shadow of his former self – a fact that the banks have noted as they try to move in and take over the land that the park stands on. The family honour must be upheld! The banks can't take the park away! It's up to you to enter the park and find out what happened. What atrocities are hidden there that could send a man mad? Can they be stopped? How?

You must find the answers to these questions in Imageworks' latest release, *Theme Park Mystery*. The game is an entirely graphics-based adventure spread across four zones – Yesterdayland, Futureland, Dreamland and Dragonland. All four sections have their own method of gameplay and their own puzzles to solve, but extra problems must be encountered before you can travel from one realm to the next. Throughout the park are hidden eight renegade demons, who must be returned to Zoltan, the master of the fortune machine before the park can return to normal, and there are all those machines that need to be looked after. Well no-one said it would be easy.

The fact that *Theme Park* mystery has been written by a seasoned adventure programmer is well in evidence. The puzzles are reminiscent of classic text only games, but with definite arcade overtones. The graphics and sound are extremely atmospheric, ranging from the amusing toy soldiers and bandstand music found in the grabbing machine, through the dark and oppressive caverns of Dragonland, to the just plain weird creatures of Dreamland.

Behind the good-looking exteriors hides a devil of a game. The puzzles are tough enough to test the most ardent adventure fans and the scurrying creatures of the arcade section don't let up for a minute.

It'll be quite some time before the secrets of *Theme Park Mystery* are uncovered, but it's certainly compulsive playing until they do!

Maff Evans

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MONO VGA	SAMSUNG	ML 4571	12"	95
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SMALL DISKS, BIG PROGS

As programs continue to get more sophisticated and take up more room, software houses have more and more of a problem distributing the disks. Not only are there four distinct disk standards to support – 360K 5.25-inch, 1.2Mb 5.25-inch,720K 3.5-inch and 1.4Mb 3.5-inch – but the first two are becoming badly underspecified. *WordPerfect* 5.1 comes on 11 360K disks and Windows 3 takes five 1.2Mb floppies. A 3.5-inch version is also available and if you need it you can send for a 360K set, presumably of 20 disks!

It's hard to see where the answer lies. Although IBM is rumoured to be introducing a 2.88Mb 3.5 inch drive on a PS/2 machine later this year (see last week's PC column), it'll be a good while before manufacturers can assume this configuration when supplying application disks. In fact, in the short term it will only add to the confusion, as each company will need to support five formats. One way round the problem, which several big-name software houses are taking up, is the use of compression techniques. Archiving the files which make up an application can reduce the number of disks required by a half. It's interesting to see a technique introduced by the public domain and shareware suppliers being taken up by the big boys

WYSIALAOWYG

It's all too easy to believe all the hype about DTP and to become convinced that what appears on the screen is actually what is going to appear on paper when you print. For a start, the resolution of a PC screen, even a relatively high-res one like a VGA, is between a quarter and a third of the resolution of a 24-pin dot-matrix or a laser printer. Even if you work at double actual size there will be some items that appear correct on screen but print out differently.

Perhaps one of the most obvious places you will notice this is if you size and position frames on a DTP page by eye. Working at actual size, the frame may appear to be the same size and aligned horizontally or vertically to the eye. At the limited resolution of the screen they do occupy the same rows or columns of pixels. Zoom the screen up to twice actual size (still at lower resolution than many printers), and the lines no longer line up. Most DTPs working at actual size on screen only offer What You See Is A Loose Approximation Of What You Get (WYSIALAOWYG).

One of the ways to get around this is to be strict in your working methods. If you need to create two frames which are the same size, don't create the copy from scratch but use the 'copy frame' function. This ensures the two frames really are the same size. Position the second frame using number entry for its co-ordinates, not by moving and placing it by eye. In *Timeworks Publisher PC*, for instance, you can use the SIZE AND POSITION window to set the horizontal and vertical co-ordinates of the top left-hand corner of the frame. Note the co-ordinates of the first frame and type in the matching reference of the second to position it accurately on the page.

WATCH FOR DOS

If you're interested in timing applications or tasks on your PC, you'll probably find a stopwatch handy. It's quite possible to program a stopwatch function with nothing more than standard batch file commands. Such a batch file is included in *Supercharging MS-DOS* by Van Wolverton, published by Microsoft Press. First, you'll need a short file which adds a carriage return to a command. This can be done by typing:

```
A> copy con cr.dat
[Return]
[F6] [Return]
```

The batch file itself then contains the following lines:

```
echo off
echo Starting time
time < cr.dat | find "C"
%1 %2 %3 %4 %5 %6
echo Ending time
time < cr.dat | find "C"
```

When you have entered this batch file and saved it as TIMER.BAT, you can time most programs or DOS functions that come back to the DOS prompt by typing:

```
timer <program name>
```

The program uses DOS's own TIME command to display the time and forgets the second line of the command by taking input from the file CR.DAT, just created. By redirecting the output to the DOS FIND command, the results are displayed on the screen.

The line with nothing but parameters in it passes on the command you're trying to time and allows for that command having parameters on its own. The last line of the file displays the finishing time and subtracting one from the other gives the elapsed time, to the nearest hundredth of a second.

VIDEO WALLPAPER

One of the gimmicky new functions of Microsoft's Windows 3 (others include packs of animated patience cards) is the ability to select your own background for the desktop. Microsoft refers to this as 'wallpaper' and likens it to having a picture on your office wall. Any Device Independent Bitmap (DIB) can be used for this image, and Windows 3 can tile a quarter-screen bitmap to fill the whole screen by repeating itself.

DIBs supplied with the package include a drawing of a chess board, various festive patterns and some geometric designs, lines, pyramids and cubes. I doubt it will be long, however, before this area is used for some quite gratuitous advertising. Perhaps I'll start up an agency myself.

CASTLES IN THE AIR

The Windows 3 seminars last week were run by QA Training, one of the top PC training organisations in the country. Its London training centre is extremely well equipped with rows of IBM PS/2 machines, slide projectors and back-projected PC screens for the instructors. As well as doing the job of introducing the new product very well, it provided all attendees with a brochure of up and coming training courses. These are run at the London centre and at the 'QA Castle' in Cirencester.

The brochure left me rather cold, for a reason I couldn't put my finger on. It was certainly well-presented, professional and anything but flashy, so I asked my wife what she felt about it. Sue's pretty good at assessing book design and at putting forward her initial reactions succinctly. Her opinion was that it looked threatening.

QA

• QA's brochure: a trifle intimidating?

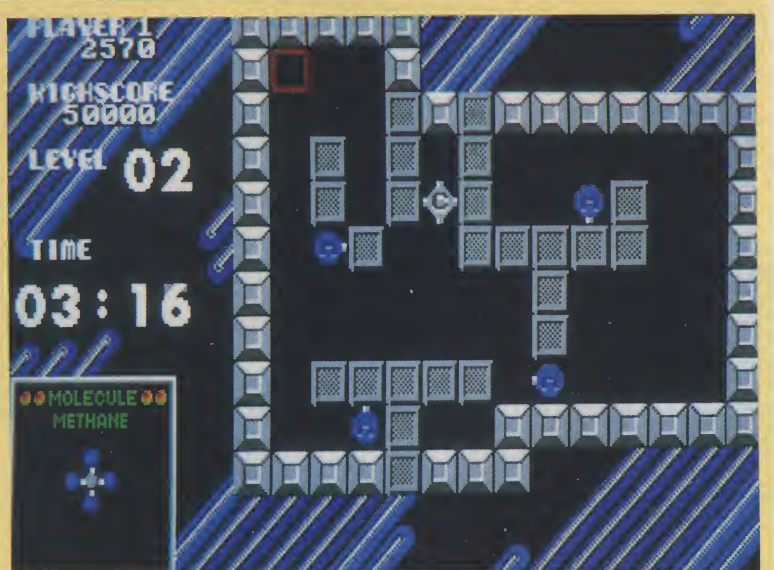
For a brochure dedicated to teaching this is rather odd, but she has a point. The brochure is fairly stark, with a lot of moody black and white shots of the company's training facilities placed at strategic points in the copy.

The pictures are predominantly empty of people, focus heavily on the QA castle with its studded oak doors, high towers and narrow windows, and on the PCs. A lot of the PC shots, including the cover, make use of bar motifs laid across keyboards or monitors by light shone through Venetian blinds. The overall images left by the photographs were of capture, foreboding and isolation. Do any readers feel the same?

Simon Williams

PC GAME of the WEEK

ATOMIX



Grandslam
• £19.99

At first sight this could be mistaken for an educational program, as the object is to build ever more complicated molecules by manoeuvring individual atoms into their correct place. But after a few games it begins to look like this is just a cover for a simple, if addictive, maze game.

You start with the basic water molecule, made up of two blue balls (hydrogen atoms) and one red ball (oxygen). These are distributed around a simple maze, and must be moved into the shape shown in a window at the bottom of the screen. The catch is that the maze has no friction – once started in a particular direction the balls don't stop until they hit something, either a wall or another ball.

This is the secret of the game, and means you have to plan ahead if you are to stand a chance of solving the puzzle before the timer runs out. Finish it, and your score is totted up and you move on to a more complicated molecule. Fail, and it's back to the water molecule again. There are 30 levels in all, so it should keep you busy for quite a while. The game has some frustrating aspects, but it's good clean fun.

In the end it could even be quite educational. It may bear no relation to the way molecules actually come into being, but after a good session you certainly remember what the various molecules look like. Grandslam certainly thinks it's educational – the company is giving away a Commodore Amiga to the first chemistry teacher to finish 20 levels, and £100 to the student nominating the teacher.

Matt Nicholson

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THE SHOPPING EXPRESS BUYER'S GUIDE TO MONITORS, SCANNERS JOYSTICKS AND MICE

No computer is complete, there are always peripherals to add to make it just that bit more useable. Joysticks and mice offer control over the micro, scanners allow you to grab images for your documents and monitors let you see what's happening more clearly. For the best buys, read on...

JOYSTICKS

Joysticks, mice and trackerballs are the most common peripherals to be connected to any computer, and now come in all shapes and sizes. The vast majority of joysticks can be connected to any machine and are divided into two categories: hand-held and traditional arcade style. Increasingly the hand-held type are taking over as the most popular sticks.

■ KONIX NAVIGATOR

FROM Konix: 0495 350101
PRICE: £14.99

A hand-held joystick that has become one of the market leaders recently. It's been well designed to fit snugly in your hand and has a standard auto-fire feature. The design is such that it can be used by both left and right handed owners without difficulty.

▲ Excellent design
▲ Single fire button located on the handle
▲ Auto-fire
▲ Comfortable...

▼ But not to everyone

■ POWERPLAY CRUISER

FROM Powerplay: 0457 876601
PRICE £12.99

Great streamline shape with very sturdy design. Powerplay claims to have the lowest return rate of all the joystick manufacturers. A clever ring on the base of the stick makes it possible to vary the flexibility of the grip.

▲ Suckers let you bolt it onto desk
▲ Two fire buttons
▲ Unusual design and colour scheme
▲ Sensitivity control

▼ Unwieldy

■ COMPETITION PRO 5000

FROM Dynamics: 061 4290981
PRICE £15.95

A standard arcade stick with a difference – it's been designed in clear plastic so that all the inner workings can be seen. Very sturdy design which stands a lot of hammering.

▲ Trendy clear-plastic design
▲ Two fire buttons located on the base
▲ Robust

▼ Can't be mounted on desktop

■ TAC 50

FROM Suncom: 0666 504326
PRICE £13.99

Standard arcade-style stick. Includes microswitches that make a loud click when movement occurs. Grey colour scheme. Too flimsy for many games.

▲ Includes microswitches

▼ Noisy
▼ Stick wobbles around too much
▼ Looks very unadventurous

■ MICROLEISURE STARCRUISER

FROM Microleisure:
PRICE £18.95

Lots of extra features including a switch to change the direction of control – pushing forwards can be interpreted as pushing backwards.

▲ Two fire buttons
▲ Lots of features

▼ Bulky and unattractive design
▼ Expensive

■ QS-113 DELUXE

FOR PC compatibles only
FROM Datel: 0782 744707
PRICE £29.99

Features allow this stick to be set in either auto-centering or free-floating mode. X and Y axis can be trimmed using added switches. An expansion card is included for connection to IBM PC-XT/AT. Two 15-way D-type game ports and an on-line 3-position selectable clock speed are included.

▲ Suction pads
▲ Auto-fire
▲ Reasonably cheap for a PC stick

▼ Clumsy design

MICE

Mice are more machine-specific with each mouse being designed to be connected to a specific machine. Trackerballs are like up-turned mice; instead of rolling the ball over a flat surface, its ball is rolled by hand.

■ SERIES 9 MOUSE

FOR: PC compatibles
FROM Logitech: 0925 413501
PRICE £91

This smooth-looking ergonomically designed mouse is one of the most popular of Logitech's design. They are claiming that some 3.5 million units have been sold worldwide. Software comes bundled.

▲ Fits easily into the hand
▲ Very good control
▲ Good looker

■ MICROSOFT MOUSE

FOR PC compatibles
FROM Microsoft: 0734 500741

Microsoft aren't exactly best known for their mice, but this one is another mega seller. It's been well designed to fit comfortably in the hand and glides across surface tops.

▲ Robust
▲ Functional
▲ Good bundled software

▼ Archaic design

■ TURBO MOUSE 2

FOR PC compatibles
FROM NTS

Instead of a roller-ball this mouse uses photo-electric cells to detect movement. Unfortunately this means that it can only be used on a special mouse mat and, due to the felt-pads underneath, it runs stiffly across this.

▲ Looks very high-tech

▼ Awkward to hold
▼ Mouse buttons are badly positioned

■ PC MOUSE II

FOR PC Compatibles
FROM Mouse Systems Corporation: 0256 461744

This brand-new design is claimed to be Mouse Systems' most advanced yet. It's another photo-electric cell design which has the advantage that there are no moving parts to get dirty or wear out. Dynamic acceleration gives it tight cursor control. Comes with its own mouse pad.

▲ User determined resolution from 20 to 6400 CPI
▲ Fits well into the hand
▲ Stylish

■ REPLACEMENT MOUSE

FOR PC and Amiga
FROM Datel: 0782 744707
PRICE: £29.99

This standard rubber coated-ball

➤

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REPAIRS FOR AMIGA AND ATARI

mouse is intended to replace Amiga or 1512/1640 PC mice. It sits on Teflon guides for very smooth movement and has an optical system counting of 500mm.

▲ Cheap

▼ Very poor design
▼ Difficult to use mouse buttons

■ KEMPSTON MOUSE

FOR ST
FROM Kempston Data: 0234 841224
PRICE: £29.99

There aren't many replacement mice for the ST, but this is one of the best. Small and compact, it fits easily into the hand and can be used on a very small area. There is a noticeable difference from the standard ST mouse.

▲ Good design
▲ Only small work area required
▲ Long-lead

▼ Cheap looking

■ TRACKERBALL

FOR ST
FROM Third Coast: 0257 424442
PRICE £24.99

The Trackerball is brilliant for playing *Marble Madness* but it's not really a lot of use for much else. The unit is big and cumbersome but you don't need the sort of space which a mouse requires so things aren't all bad.

▲ Good control
▲ Sturdy design
▲ Reasonably cheap

▼ Few games play well with it

SCANNERS

With a scanners you can grab an image from a page and import it as a graphic file into your computer. Three different types exist: handheld, flatbed and printer scanners. The hand-held scanner is the most popular and is dragged by hand over an image. The problem with these is that only a narrow width can be scanned. Printer scanners fit onto the head of a printer and scan an image by forcing the print head back and forth across the picture. The quality isn't particularly good, but then they're usually cheap. Flat-bed scanners are the most reliable and most expensive. The image is scanned by passing a scanning head over the flat picture.

■ PROSCANLAB

FOR Amiga 2000
FROM ASDG: 0923 818079
PRICE £3900

This is currently the only colour scanner available for the Amiga and is a highly professional flat-bed design. Variable resolution from 30 to 300 DPI is possible. Scanning can be in one, three, eight or 24-bit mode with real-time scrolling over large images. Colour correction is possible with independent control over red, green and blue levels. Edges can be emphasised or smoothed. The four-colour separations possible are some of the best seen on a home micro.

▲ Only system to offer colour system on the Amiga
▲ Postscript compatible
▲ Software reads and writes images in any Amiga format
▲ Variable scan resolution

▼ Very expensive

■ GENISCAN GS4500

FOR Amiga and ST
FROM Datel: 0782 744707
PRICE £189.99

A hand scanner with 105mm width and 400dpi resolution. Adjustable switches let you alter the brightness and contrast of a scanned image to obtain the best results. Good software, which offers features to cut and paste selected areas of the image, is included in the price.

▲ Good results
▲ Software saves images in a variety of formats
▲ 400dpi

▼ Clumsy design

■ DAATASCAN

FOR ST
FROM Kempston Data: 0908 677886
PRICE £150

Another hand scanner with a 105mm scan strip. Kempston has just released new software to accompany the scanner. Besides the usual cut and paste features, there are options allowing you to scan over the top of other images. 200 dpi resolution is limiting even though four grey-scale options are available.

▲ Easy to use
▲ Cheap

▼ Only 200 dpi
▼ Roller can slip giving uneven images

■ CAMERON HANDY SCANNER

FOR ST & Amiga
FROM Cameron: 081-449 9192
PRICE From £199.89

The compact design is ideal, but sadly only 64mm wide strips can be scanned. Three types of grey scale are possible. Optical character reading software is bundled with the machine. This interprets text scanned into memory and translates it into ASCII characters. Cameron offers a wide range of scanners in several sizes including an A4 flatbed scanner.

▲ Good quality output
▲ Small width
▲ 200 and 300dpi resolutions

▼ 64mm scan width
▼ Hard to install

■ HS3000

FOR PC compatibles
FROM Ajwad: 081-788 1982
PRICE £215

The HS300 is much cheaper than other PC hand-held scanners and comes with the excellent Halo DPE editor. The software works in resolutions up to ➤

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300dpi, although the scanner can simulate 400dpi.

▲ Cheap
▲ Good bundled software
▲ Pseudo 400dpi mode

▼ Feels tacky

■ HANDY SCANNER 4

FOR PC compatibles
FROM Cameron: 081-449 9192
PRICE £290

A sturdy hand-held model which fits neatly into the palm of the hand. Some very useful optical character recognition software (OCR) is bundled. The scan head isn't very large, but the software enable you to scan a large image in strips and join the bits together.

▲ Proper 400dpi scanning
▲ Good software
▲ OCR utilities bundled
▲ Comfortable to use

▼ Small scan head

■ SCANMAN

FOR PC compatibles
FROM Logi UK: 0925 413501
PRICE £229

The ScanMan hand-held looks good and is reasonably priced. The 400dpi scanning mode offered is simulated and the software can scan images directly into Microsoft *Windows* or its own *ScanPaint* utility.

▲ Reasonably cheap
▲ Nice looking number
▲ Scanning can take place in Windows

▼ Not true 400dpi scanning

■ MSF300Q

FOR PC compatibles
FROM Aptec: 071-627 1000
PRICE £1552

Aptec's flatbed scanner, manufactured by Microteck, can support up to 64 grey levels and includes graphics software for halftone and line-art applications. Expensive but then the 300dpi scans are quite something.

▲ Excellent 300dpi scans
▲ 64 grey-level scans
▲ Good software

▼ Expensive...
▼ And doesn't offer 400dpi scanning

■ SP-MH216AF

FOR PC compatibles
FROM Mitsubishi: 07072 76100
PRICE £689

Mitsubishi's offering is an interesting mix of the benefits (?) of hand-held and flatbed scanners. A sheet of paper (up to A4 in size) is fed through automatically, but must be guided by hand. It's not as good as a true flatbed – but for almost half the price you can't really complain.

▲ Cheap alternative to flatbed
▲ Takes A4 sheets

▼ Only 200dpi resolution

■ FX-RS505

FOR PC compatibles
FROM Panasonic: 0753 73181
PRICE £1374

Scanning at up to 400dpi is possible in 16 shades of grey. Its top resolution will become more useful as 400dpi laser printers appear. Panasonic's own scanning software, *Panscan*, is supplied.

▲ Good 400dpi scans
▲ Cheaper than 300dpi scanners
▲ Solid design

▼ Only 16 grey scales available at higher resolutions

MONITORS

There are many monitors to choose from – most offer the same thing in a different box. The majority of monitors tend to work with PCs only, however, there are various others that are suitable for connection to Spectrums, C64s, STs, Amigas and all the other home machines. There are monitors for specialist applications: large paper-white monitors for DTP, high resolution colour monitors for graphic work, compact LCD screens for portability. One of the major problems with hooking up monitors is finding the right leads. Lightwave Leisure on 051 6305003 specialises in producing leads for connecting monitors to almost any type of machine.

■ PRO 8CM852

FOR Amiga, C64, Spectrum, ST
FROM Philips: 081-689 2166
Price £299

A single scan-rate monitor similar to the Commodore 1084, but in a different case and with many of the esoteric functions moved from the front panel to the rear. The screen is etched rather than having the anti-glare coating of the 1084 – this gives reduced reflection from external light sources.

▲ SCART and composite input
▲ Excellent stable picture quality
▲ Good contrast and brightness controls

▼ Mono sound input and output

■ QUADRAM MS1420

FOR All machines
FROM SDL : 081-309 1111
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▲ Professional looking
▲ Solidly built
▲ Good picture
▲ Works with numerous machines

▼ Documentation is poor

➤

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U 205: Game Music (Creator create your own music, superb!!)
U 206: Ghost Writer (Latest demo construction kit)
U 208: Powerpacker (Powerful Cruncher utility, used by experts)
U 302: Fonts Vol 2 (even more fonts)

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D168: Pendal Europa 50 (Now Look!! Get this disk - Fantastic Crusaders Music)
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▲ Matches ST's colour scheme

▼ Colours tend to be dark
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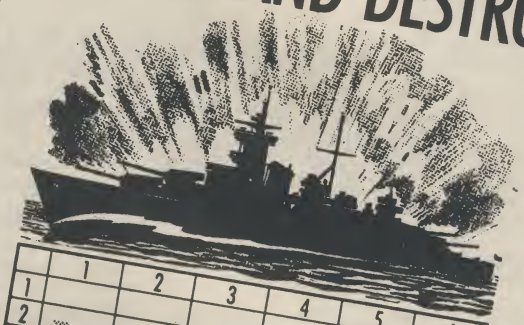

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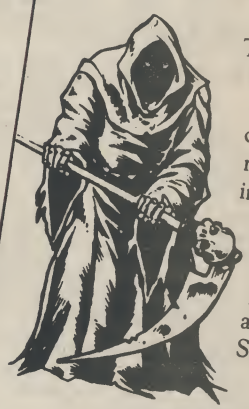

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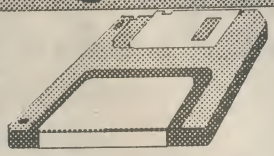

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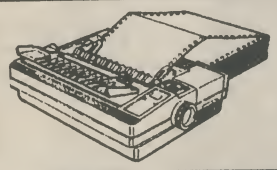

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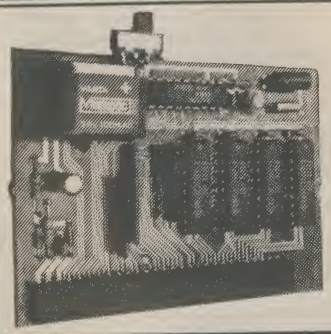

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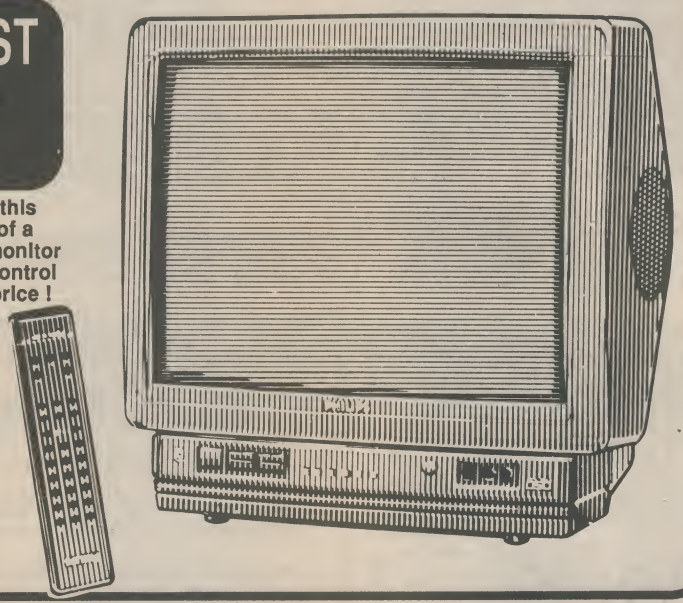

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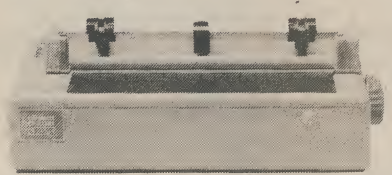

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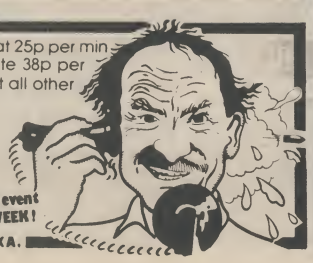

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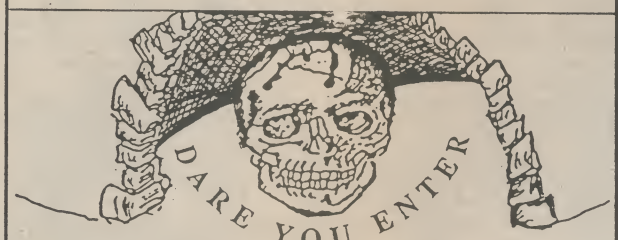

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COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

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TEXT PROCESSOR

The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.

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Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.

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Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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TAKE UP YOUR PC AND W

• *Toshiba's T1000 SE: king of the notebooks.*

The new generation of laptop PCs are small enough to make computing on the move a viable option. Mike Hardaker looks at the practical implications of having Lotus on your lap.

The original concept of the PC was great: it provided computing power on the individual's desktop. Then some bright spark realised that to be truly personal, a computer had to travel with its person, few business people being tied to their desktops 24 hours a day. The portable computer was thus born, with the Compaq Portable offering all the power of an IBM PC-XT in a box about the size of... well, about the size of an IBM PC-XT, in fact, but with a handle.

If you needed something you could carry around without getting a hernia, Tandy offered a range of lightweight machines about the size of an A4 folder. These had very little memory, minute screens and they couldn't run IBM or Apple II software (the two industry standards of the time), but they were truly portable. Journalists used them a lot, since a built-in modem allowed up-to-the-minute copy to be transmitted along telephone lines from war-zones, economic summits and other such global hotspots.

Eventually, companies such as Toshiba, Zenith and Epson managed to get a PC's internals into a briefcase-sized box and the battery-powered laptop PC was born. Originally, these devices had few facilities and cost a great deal. However, they did offer portable IBM compatibility on the move, so many were sold. Now, of course, the relentless march of technology has led to the power of laptop PCs increasing, while the size, weight and cost drop. The latest generation of so-called 'notebook' PCs can actually fit inside conventionally-sized briefcases as easily as an A4 ring-binder. They weigh around seven pounds, and they don't cost appreciably more than their desktop counterparts.

WHAT'S AVAILABLE

There are many different types of portable computer which cost from under £500 to well over £5,000, from simple text editing tools to computers which can rival the power of the leading desktop PCs.

Ultimately, however, portables do fall into two schools. There are those machines which can be run from their own, internal, batteries, and there are those which require the presence of a mains socket (often called transportables, to distinguish them from the battery machines). A PC which requires you to use a 13-amp plug may not seem very portable, but if you simply need to move your PC from the office to your home (in order to do some extra paperwork over the weekend or to have the odd bash at *Flight Simulator*, perhaps) then you'll never need the extra weight and complexity provided by batteries.

However, if you want to work on trains and boats and planes (as Billy J Kramer and the Dakotas put it), you need batteries. This is the domain of the most portable portables.

NOTEBOOK PCs

These are probably the ultimate portables. Leaving aside the truly minute pocket-sized PCs (such as the Atari Portfolio and the Poquet PC), these are the smallest PCs around. Generally about the same size as an A4 folder, the notebook PCs probably represent the minimum size for serious computing. Most come equipped with a single floppy disk drive, although some now have hard disks too. Look out for the 3.5-inch standard drives, as some notepad machines use 2-inch floppies (as used in video camcorders). If your machine has a 2-inch disk, you need to buy an extra, external drive for either your notebook or desktop PC if you want to transfer data between the two. Either that, or enter the murky world of comms.

King of the notebooks is probably the Toshiba T1000SE. With an Intel 80C86 microprocessor running

THE PRACTICE OF COPU

In theory, notebook PCs should be small enough to use practically anywhere. Recently, a trip to Europe coincided with a notebook PC being in my hands, so I decided to put the theory to the test.

The test machine was a Veridata from Newtron Ltd. This is an XT-class machine with an 80C86 processor chip, 640K of RAM, a single 1.44Mb 3.5-inch floppy disk and a backlit LCD screen compatible with the CGA standard. DR-DOS, Digital Research's MS-DOS compatible operating system, is built into ROM. It has the great advantage over other notebook PCs of costing only £804.

For software, I put together a floppy disk which contained a stripped-down version of Microsoft's *Works* integrated package (no help files or spelling-checker). This gave me a word processor, a spreadsheet and a flat-file database, together with over 1Mb of free disk-space for my files. I then copied this disk several times to give myself a few work disks. The PC, together with its power supply cum battery-charger, a couple of cables, the disks and an international plug adapter fitted neatly in my briefcase. There wasn't room for much else, but who needs paper if you've got an electronic notepad?

The first test was the National Express coach to Gatwick airport. As anyone who has ever tried to drink a cup of coffee on one can testify, coaches offer a pretty bumpy ride.

• *Make even the most relaxed moments productive with a laptop.*

This makes them bad places to work, since every twitch of the suspension moves the PC's keyboard, leading to miskeying and dddooublllle kkkkeystrokkkes. However, there is just enough legroom to get the PC into a comfortable position on your lap, so the coach must be considered to have passed the test, if not with flying colours.

Since airports are big, open places, it was no problem finding somewhere to work while I waited to check in for my flight. The only problems cropped up when the check-in time arrived. For safety reasons, you're not allowed to carry electrical devices in any luggage which is to go in the hold of the aeroplane. This means you have to carry the power supply and all the PC's cabling in your hand luggage – annoying extra bulk and weight, but worth remembering while you're packing.

The real fun began on the other side of Passport Control. I had moved the PC from my briefcase to my flight bag (you're only allowed one bag on the plane, and the flight bag has room for books, newspapers, whisky and the like). When the bag passed through the X-ray machine at the security check, all hell seemed to break loose. The combination of computer, power supply and cables, together with a Walkman, a microcassette recorder and a pocket chess set, must have looked like a very large bomb. To allay any fears, it was necessary to demonstrate that each item worked. The moral of the story is this – if passing through an airport with a laptop, make sure the batteries are holding plenty of charge. If a security guard asks you to turn on your PC and nothing happens he might well

WALK...

at 9.54MHz, 1Mb of RAM and a single 1.44Mb floppy disk drive, it has enough power and storage to perform the basic PC functions – you couldn't run a big *dBase* application, but many word processors will work fine. The Toshiba beats its competition due to an excellent keyboard – positive and 'clacky' in feel – and a very clear screen (the traditional weak point of portable PCs). It also has Toshiba's own 'Resume' mode, which means that when you turn on the PC it takes you straight into the application you were using when you turned off the machine, with the cursor blinking exactly where you left it. If you're working 'in transit', this is extremely handy, meaning some useful work can be done even during a 10-minute taxi journey – with most laptops you have to go through the time-consuming process of loading up your application and its file. MS-DOS 3.3 is provided on ROM so you don't need to carry around a boot disk – it all happens automatically. The T1000SE retails at £1,489, although a careful look through the advertisements in the magazines should reveal a number of suppliers who are discounting this figure. Toshiba is on 0932 841600.

• The highly desirable Compaq LTE286.

The best budget machine we have seen is the Veridata laptop from Newtron – on 0482 870036. Also based on a 9.54MHz 80C86 with a 1.44Mb floppy, this has 640K of RAM and comes with Digital Research's DR-DOS in ROM. Although the keyboard and screen are not up to Toshiba standards, they are still better than average, and certainly good enough for fairly regular use – this feature was prepared on a Veridata. The Veridata costs £804.

For more grunt, the Compaq LTE286 provides a remarkable degree of compactness, fitting a 40Mb hard disk and AT-compatible 80286 processor chip into the A4 package. Unfortunately, the keyboard and screen aren't up to much, reducing the overall useability of the machine. Also, the price for a fully-loaded LTE is a massive £3,738 (although discounts are sometimes available). Those with deep pockets can contact Compaq on 081-332 3000.

Other contenders in the notebook field include Zenith with the MinisPort, and Panasonic with the CF-150. As this seems to be one of the main growth areas in the PC world, expect to see many new names over the next few months.

BASIC LAPTOPS

These are the machines which offer much the same facilities as a desktop PC-XT, but in a portable package. To some extent they have been usurped by the notebook machines, but they do offer larger keyboards and better screens, as a rule, making the day-to-day use of such a machine more pleasant. The trade-off for this is increased overall size, making them far less practical to use in cramped situations such as on aeroplanes.

Toshiba once again scores, with the T1000. This has a similarly excellent screen and keyboard to the T1000SE, its kid brother, together with the Resume mode. Two floppy disks are provided, although as these are of the 720K variety, you don't gain any storage space. If, on the other hand, you are involved in a lot of copying to and from disks, you will find the extra convenience of the twin-floppy machine a boon. The T1000 costs £795.

Also worthy of mention in this area is the Zenith

• The SupersPort offers some powerful features in an extremely compact box.

SupersPort. Although not the lightest of the laptops, it does have a very large screen, with a normal aspect ratio. This means that your circles come out round rather than ovoid, which can be a great help if you use graphics applications. The SupersPort costs £1,170 and is currently being heavily discounted.

Best cheapie is the much-criticised Amstrad PPC. It has numerous flaws – no rechargable battery, for example, leading to a massive Duracell bill – it is large and it is generally considered superbly ugly. Nevertheless, it is extremely inexpensive, starting at only £459. Best value is the twin-floppy PPC640DD which has a built-in 2,400 baud modem and comes bundled with the *Mirror II* comms package. This costs £746.

Other machines in this class come from a wide variety of manufacturers, with Epson, Sanyo, and Panasonic among those companies with a good reputation.

HARD DISK PORTABLES

Whereas a hard disk is more or less essential on modern desktop PCs, it is still realistic to have a laptop without one. This is because many people use a laptop as a second machine, dedicated to working on one ➤

OF COMPUTING ON THE MOVE

assume it is just a hollow case filled with Semtex. If such a conclusion is reached, it could well cause you to miss a flight or two.

Once you're on the plane, life gets a bit easier. In standard 'steerage' class, there is very little legroom, so getting a bag off the floor and then retrieving a computer from it can result in a bit of elbow-contact with your neighbours. Nevertheless, it is possible, and once you are in position to start work, there is just enough elbow room to get on with it. On an aeroplane, a laptop computer really must be used on your lap – if you try to use the tray-table in front of you, you will find the PC's keyboard is so close to your chest it is impossible to type. Even in turbulence, however, an aeroplane is a pretty reasonable place to work, with only rioting French schoolchildren disturbing the peace.

My arrival at Nice airport was uneventful, but some customs posts may be very curious about portable technology. Keep your receipts with you, if you have a laptop, and be prepared to swear that you are not importing the machine for sale.

If you really feel that it is good to work while you're on the move, let the train take the strain. Even British Rail trains, which seem to be far more cramped than their continental counterparts, offer plenty of space to bash away at the keyboard. Unlike on aeroplanes, you can actually use the table too.

Cars, on the other hand, are less than ideal (unless they are stationary). Working in the back of a Renault during a drive from Nice to Brussels proved perfectly acceptable in most circumstances – until there was a bump in the road. The PC would then leap in the air and bounce around the back seat. On one occasion, it even turned itself off, losing my previous 10 minutes of work.

• Portables fit comfortably inside a flight bag – but remember you must take any laptop with you into the passenger section, thay won't take one in the hold.

The all-time worst place to use a laptop computer must be the hovercraft. The journey I took from Calais to Dover was in conditions described as 'slightly choppy'. It took me ten minutes to type 'working on a hovercraft is quite difficult'. Fortunately, the journey is short (35 minutes) so workaholics need not be away from the 'portable office' for too long. Although this trip did not involve a boat journey, I have used a different laptop on a channel ferry in days past, and computing is feasible in all but the roughest weather. Unfortunately, the only place with tables at the right height is the bar, so you can find yourself surrounded by interested drinkers.

All in all, it really is very easy to work in a wide variety of places – from an aeroplane to a café – if you have a notebook PC. These machines really are small enough to use on public transport whereas their predecessors were just too bulky.

The big question, however, is 'do you want to?' In many jobs, travel provides the only respite in a highly stressful life – and an hour with *The Guardian* or the latest Jeffrey Archer can make for a pleasant change. All work and no play, after all...

specific application while on the move. So, although a desktop machine may contain heavyweight packages like database, CAD and spreadsheet applications with massive files, the laptop might have a simple word processor or a basic data acquisition program which can be used for entering live information. This data can then be manipulated back at base using the more powerful software.

However, you may be in a position where the sheer amount of data you need to have on-line at any one time exceeds the capabilities of the 1.44Mb floppy disk. Alternatively, you may need to perform the more powerful functions actually on the laptop – if you do your main work at more than one location, for example. In such circumstances, a hard disk becomes a must.

Hard disk versions of the notebook machines are appearing, such as the Compaq LTE286 described above, but these aim at a specialised user who is prepared to pay a price premium (although Watford Electronics has a hard disk notebook at £999 – but this doesn't include a floppy disk which must be added externally). For most people who actually require a portable with desktop power, it is better to go for a more conventionally-sized laptop, with its better screen and keyboard, and lower price.

• *Newtron's laptop PC is the tops for value.*

At the XT end of the market, Toshiba's T1200 (effectively a hard disk version of the T1000) is another goodie at £2,294, with a hard disk model of Zenith's SupersPort also available at a cost of £2,041. The hard disk Epson PC Portable is currently being advertised at not much more than £1,000 in various quarters, and although it lacks the polish of the Toshiba machines, this is a perfectly useable machine at an attractive price.

Moving up a step to the world of AT-compatible laptops, Toshiba again has a winner with the T1600. This has an 80286 processor and its backlit LCD screen supports the Enhanced Graphics Adapter (EGA) graphics standard – the other machines described so far use the lesser 640 x 200 mono CGA resolution. The T1600 has the usual good keyboard, screen, Resume mode and so on. It costs £3,674. For a less expensive machine, the Tulip LT286 at £2,639 offers a good alternative. Or it's certainly worth taking a look at the Amstrads described in the next section.

TOP SPEC, TOP PRICE

If you really need to carry around a very high powered machine, the PC manufacturers can provide what you want – at a price. Displays compatible with the VGA (Video Graphics Array) standard are the norm here, with the 80386SX processor the standard chip, offering access to the most powerful 80386-specific software such as Windows/386 or the new Windows 3.

For genuine portability, the best is Compaq's SLT/286. Its unique 'lunch-box' design means it is actually usable on an aeroplane, for example, while the detachable keyboard makes it comfortable to use on a desktop. The screen is superb, and the keyboard is also very good, although a somewhat idiosyncratic design means it takes some getting used to. The only downside is the use of the 286 chip rather than the 386SX. Price is a meaty £3,395.

Toshiba has yet another good machine in this area.

• *The amstrad PPC: ugly it may be but good value it is.*

With excellent VGA graphics and a high-quality keyboard, its 386SX-based T3100SX is one of the flashiest machines you can have on your lap. Its bulk makes it less portable than many laptops, however, and its price-tag of £4,195 makes it strictly for the comfortably-off power user.

The latest entrant in the power arena is Amstrad, with its ALT-286 and ALT-386 laptops. These appear to have a higher build-quality than most Amstrad products and are aimed firmly at the business market, rather than the company's traditional base of the home user. We have not yet had a chance to review these in depth, but first impressions make the £1,599 and £1,999 (respectively) machines look excellent value. The ALT's good keyboard represents an Amstrad first, and the backlit LCD screens banish memories of the PPC's dire display.

Even with Amstrad, however, you pay a premium for portability, and you must ask yourself whether you really need this sort of power in your hand, rather than on your desk. ■

SMALLER AND SMALLER

If the prices of the PC compatibles in this feature has caused you to take a sharp intake of breath, it might be worth considering sacrificing pure PC compatibility.

If portable designers are allowed to get away from the constraints of having to run ordinary PC programs they can produce far smaller and cheaper designs, but at a cost in terms of ease of use.

At the smallest end of the scale are machines like the Agenda, Psion Organiser and the Sharp IQ series. Despite the many claims made for them, these are little more than electronic address books with calculators, and it would take a desperate person to attempt to produce, say, a letter on one.

Moving up the scale slightly we come to the Atari Portfolio. This tiny machine with a miniscule QWERTY keyboard promises, somewhat disingenously, PC compatibility. It does have an 8088 processor and a DOS-like operating system, but it can't run ordinary PC programs. Despite this its built-in suite of programs is rather good, the spreadsheet in particular which can save files in Lotus 1-2-3 format. The tiny keyboard is impossible to touch type on, but two finger typists will soon find their way around. The Portfolio is the smallest usable option, and costs £249.

• *A non PC laptop like this Z88 needs all kinds of add-ons to let you get at the data.*

Larger again is the Cambridge Z88. Featuring Sir Clive's beloved rubber keyboard, the Z88 has a rather nice piece of built-in software which combines a word processor and spreadsheet. The machine looks and feels a little tacky, but it is very usable and deservedly popular. You can find a Z88 for around £200.

One machine which has now been discontinued but is well worth seeking out is the Tandy 102. This has a 'real' full-size QWERTY keyboard which is a joy to use compared to the other notebooks. It also features a built-in modem and runs a version of Microsoft BASIC if you fancy a bit of mobile programming. Unusually, it also has the full complement of serial and parallel ports to make communications with the outside world easier.

Finally on this list of super-micros is the Psion MC200. At £626 it's not cheap but it looks extremely smart and has the best LCD screen of any of the low-end machines. It uses a graphic environment similar to GEM which is controlled by a touch sensitive mouse pad. You can add an external 3.5-inch disk for an extra £195, which makes data transfer a snap.

Data transfer is the main problem with all these machines. For most of them getting your masterpiece off the machine involves interface boxes, serial cables and comms software. Some, like the Agenda, make it easy for you and provide a complete kit. Others leave you to struggle with file transfer protocols.

If you really need the supreme portability of these machines it may be worth the hassle involved.

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UK HOME COMPUTERS

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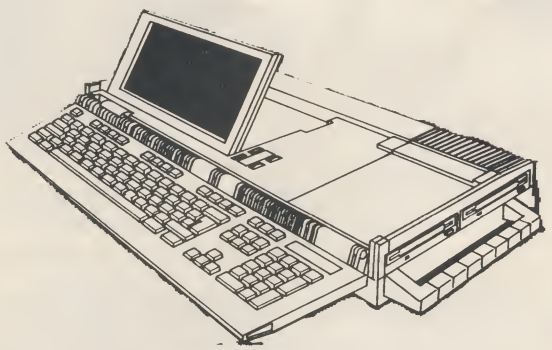

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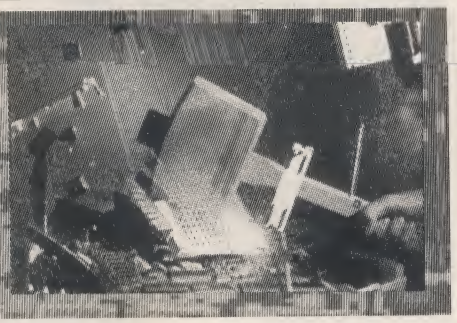

A selection of stories about computers which perpetrate disasters from the aching annals and copious columns of Mel Croucher ...

NEW YORK, USA

Wyley Gates is an 18-year-old participant in a computerised fantasy game. But fantasy spills over into reality as Gates and a friend conspire to murder his father. Investigators confirm the prosecution's allegation that the computer game has led to the killing not only of Poppa Gates, but his brother, baby cousin and a 36-year-old girlfriend.
(*New York Times*)

LAMBETH, LONDON

The London Fire Brigade installs a computerised central unit to handle all of the city's 999 calls. Home Secretary David Waddington pops in for an inspection, but Fire Officers forget to inform him that the machine has a tendency to crash. This is surprising, seeing as how the last crash occurred the previous day. When the machine goes down, personnel have to resort to all fire engines maintaining a listening radio watch, knocking out all normal radio communications. One of the main problems with the system is that the software is designed to send coded messages from hardware units via a dedicated radio channel. The hardware units have not yet been fitted because no radio frequency has been allocated. Readers should note that the minister responsible for radio frequency allocation is the Home Secretary, David Waddington.
(*Private Eye*)

MEDICAID CENTER, USA

Dr Paul Azar is an ophthalmic physician accused of issuing false bills 'through the insertion of (computer) programs or data'. He is confident of being exonerated of all charges and maintains complete innocence of any computerised hanky panky. This is just as well, because if he is found guilty he faces a fine of up to $370,000 and 185 years in jail! (*Newsweek*)

BAHAR DAR, ETHIOPIA

Because of advanced computer control and radar, pilots no longer rely on men with flags indicating that Ethiopian runways are free from hazard. An Ethiopian Boeing 737 prepares for take-off, with the on-board computer showing that no obstacles are in the flight path. As it takes off, a large flock of birds that are clearly visible to the naked eye pay both engines a visit. Thirty-one people lose their lives.
(*Aviation Week and Space Technology*)

WASHINGTON, USA

The State Department of Social Services wants to streamline child support payments in order to save time, money and distress. It pays $4.5 million for a software development system without checking to see if it meets its specification. After installation, the system causes delays in benefit payments of up to six months, and has to be scrapped. The State Department is now seeking a new system, with quotes for a two-year development scheme running at 10million dollars.
(*Washington Post*)

HEATHROW AIRPORT

The Civil Aviation Authority installs the new National Airspace Package, designed by IBM's Federal Systems Division for US air traffic control Because it has been directly adapted from the American model, it takes no account of the Greenwich meridian that passes through London. Consequently, when the IBM-9020 is fired up, Norwich appears directly above Birmingham.
(*New Scientist*)

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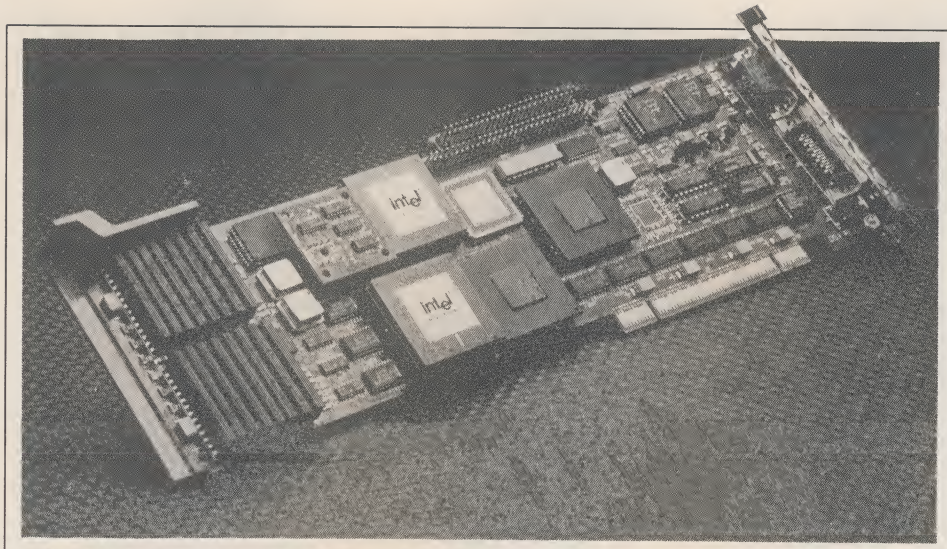


• *The Delivery Board with its twin i750 chips enables a standard PC-AT to play back moving video, high-res graphics and CD-quality audio*

INTELEVISION

Intel's new DVI technology allows any AT-compatible PC to run full motion video alongside text, graphics and multi-tracked audio. Andy Storer reveals the systems secrets ...

Intel is well known as the company which, along with Motorola, has forged the digital revolution through a rapid proliferation of ever more compact and powerful integrated circuits. After inventing the first microprocessor and continually reducing the most complex of electronics to cost-effective silicon, Intel's contribution to semiconductor technology now looks set to take on an even greater significance.

It's Digital Video Interactive (DVI) system allows any AT-compatible PC to run full motion video alongside text, graphics and multi-tracked audio – a feat that was not previously conceivable.

THE REVOLUTION FOR CD-ROM

The major implications of DVI technology will be felt in CD-ROM applications. Currently, TV quality video requires that 720K per frame be displayed at 30 frames per second for full motion effect. This means that one second of digitised video consumes 22.1Mb of storage.

A standard CD-ROM with 648Mb and a data transfer rate of 150K per second could therefore hold only 30 seconds of video and would take five seconds to display a single video frame. Obviously moving video on CD at these rates would be something of a joke! But after four years of research, the software algorithms underpinning DVI technology allowed the data representing each frame to be reduced to only 4.5K – an incredible compression ratio of 160 to one.

As such, a standard CD is now able to store 72 minutes of motion video and replay it at the full 30 frames per second. Whether this will mean that in future we'll be able to watch feature films on our PCs is open to question. At any rate, any combination of different media can be combined on a single standard CD-ROM – up to 44 hours of audio, 650,000 pages of text and 40,000 still images. With dynamic sizing of windows, overlays and four-track audio also available, the revolution affecting CD is likely to be a long, important one.

The revolution experienced by the computer industry may be even more substantial. Intel expects that lower costs will enable DVI to be incorporated into PC motherboards – instead of plug-in cards – by 1992, with the system becoming part of the central processor itself by 2000. By this time, the way we use computers will have changed beyond recognition.

THE SYSTEM

The Digital Video Interactive system comes on two plug-in cards – the Capture and Delivery boards, both priced at £1,200. The Capture card is essentially a high-resolution digitiser which allows simultaneous audio and video processing in real time. Moving video can be captured, compressed and played back at 30 frames each second and still images of up to 1,024 x 480 pixels resolution can be filtered and stored. At the same time, audio can be digitised at 14 bits per sample at up to 16KHz.

Such sampling rates are achieved through real-time compression and decompression via two i750 video chips – a pixel and display processor. The former can handle 12.5 million instructions per second – that's over six times the processing speed of a PC AT – while the display processor can treat each pixel selected to any one of 16 million colours. While fast, these two number crunchers only form part of the picture. The key to the card is the set of proprietary algorithms which compress the digitised data at unheard of rates. Typical compressions of 6:1 result in no discernable difference between a live video image and its electronically compressed counterpart.

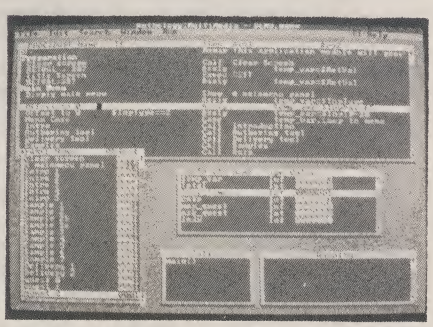
The pay-off is that high-resolution, 16-bit colour still images with file sizes of 1.2Mb can be squeezed down to 188K in less than half a second. Similarly, real-time video can be compressed to a size occupying only 4.5K per frame. Understandably, Intel is rather reticent to reveal the top-notch coding underpinning such compressions – its only comment being that new algorithms to be released in August will double the compression/decompression rates!

The Delivery board is a playback card which can be used without the Capture board allowing users to decompress stored images for display purposes. With up to 2Mb of on-board video RAM, the card is billed as a 'complete multimedia playback solution' enabling video overlays and text/graphics integration along with audio for interactive training, point of sale information, business presentations and entertainment. The same two i750 processors are to be found on this board too, though this time they are used in parallel with decompression algorithms to unsqueeze and display screen data. ■

THE PRICE OF NEW POWER

The two £1,200 boards at the heart of DVI require some pretty heavy duty software routines, so you won't be surprised that the authoring package costs another £400. Throw in a 386 with the 4Mb of RAM really needed to make effective use of the system and a 40Mb hard disk capable of storing 2,500 still images or 4.5 minutes of full-motion video, and the total bill is more likely to be in the region of £6,000. But Intel offers a motion video compression service for £150 per minute, so you could get away with just a Delivery board if you wanted to use the system just for presentation purposes. However, it's much more likely that would be purchasers would want to create their own multimedia applications. Intel's £2,700 *Authology: Multimedia* is designed for just this purpose, allowing even non-programmers to develop DVI applications based around windowed screens with multitracked sound and text/graphic overlays.

• *With DVI cards fitted, your PC could run real-time video in three windows at once with simultaneous four-track CD-quality sound. The compression routines enabling this feat manage to squeeze video data down to 180th of its original size with no loss in quality!*



• *Authology: Multimedia – Intel's authoring software for DVI offers full control over video, stills, audio, text, graphics and animation scripts through pull-down menus. It's the first software ever to combine control over all six media.*

COMMERCIAL BREAKS

In the second part of our comms feature, Keith Pomfret examines some of the commercial systems you can connect to, takes you on a tour through a bulletin board and explains how to set up your own board.

The commercial on-line services differ from the bulletin boards in that they are usually run on mini-computers or mainframes and can support multiple phone lines. This means that several users can access the system simultaneously.

They are charged at commercial rates and can become expensive if you don't watch the clock. Make sure that you read their lists of charges and understand them before you log on. Quite often you will pay for your phone call, a charge for being on line and a charge for the service you are using!

PRESTEL

British Telecom's teletext-like Prestel was the first system to make its presence felt in the UK. Some strange marketing in the early days had Prestel modulators attached to TV sets and users trying to access Prestel via numeric keypads not unlike the remote control of a television.

The few users that this attracted tended to be TV users who wanted access to Prestel's advertised 'giant database'. It was seen as a bells and whistles teletext for the well-heeled.

The numerical paging system (*à la* Ceefax) of Prestel is a reminder of the early user's struggle to wander through the huge database with no more than a numeric keypad. Prestel has evolved into a much more friendly system, but still retains its teletext appearance.

The computer specific part of Prestel is Micronet. This micro-oriented area seems to go in and out of vogue, but for a newcomer it is an ideal forum to 'meet' comms people and keep a finger on the pulse of current developments.

Recent abuse of certain areas of Micronet has caused them to be 'closed for repair', so the system looks a little bare while the problems are under review. Micronet also offers software which can be downloaded to your computer. Micronet has a free voice line more more information – 0800 200700.

MISSING LINK

Microlink is another commercial on-line service that has had changes recently. It was originally accessed by the Telecom Gold network, but problems and expansion have seen it moved to the AT&T Istel network where it seems to have settled in comfortably. A glance through the Microlink manual is a voyage through on-line services with fax, telex, shopping (including ordering flowers) and assorted services available at the press of a key. There are many interest-specific areas and a large library of downloadable software is available. The Newsbytes computer newspaper, published twice a week, is available on Microlink. Talk to Microlink on 0527 64295.

JUST FOR CIX

If Microlink is a corner boozer, CIX, or Compulink Information eXchange, is the wine bar of commercial services. It is certainly the most trendy of the on-line database and forum services, and has a large user base of journalists and computer-based professionals. As well as carrying the Newsbytes twice-weekly newspaper, CIX has over 800 subject-specific areas called conferences. These aren't all computer oriented, and cover subjects as diverse as games, politics and transport. CIX has a voice line on 081-390 8446.

TO SERVE

A new name in the UK is the giant US CompuServe system. A local UK number connects to a node in Switzerland and brings all the US shopping, information, financial and news services to the UK. Up-to-date news, views and product information is available from hundreds of areas that are updated regularly. There are areas specific to all the popular micros and many hardware and software companies keep on-line forums open on their products on CompuServe. You can contact CompuServe on 0272 255111. ■

NUMBER PLEASE

Whether you access the giant commercial databases or the single-line bulletin boards it's important to make sure that the telephone number you have is both current and correct.

To get some indication of the trouble you can cause by dialling wrong or out of date numbers, try dialling someone's fax machine and listening to the dulcet tones therein. It hurts, doesn't it?

When you're trying a new number, pick a fairly sociable time. After all, it can't be fun answering the phone at 3am to tell the ninth caller this week that the board's owner moved three months ago, and no, we haven't got a computer.

SETTING UP ON YOUR OWN

If you find comms enjoyable, sooner or later you will wonder about the possibility of running your own bulletin board.

To run a board you need a suitable computer. This can be virtually any except the Spectrum, Coupé and Atari XE, but no doubt those can be done at a pinch too.

Many boards run on PCs, Amigas, STs, PCWs, Macs and CPCs, and there's host software available for all of these in the public domain, so it doesn't have to be an expensive business either.

Assuming that you're already set up for comms and have a working serial port and modem, you need to find a suitable system to run. An auto-answer modem is essential as the phone will need to be picked up by the system. Many system operators (sysops) start by running a board through the quiet hours (11pm to 7am) on their existing phone line, but it soon becomes obvious that a second dedicated phone line is essential.

While you're waiting for Telecom to install the line for the board, you can scan around the boards that run on a similar machine to the one that you propose to use and chat to the sysops. Find out what problems they had and how they got round them.

Most sysops will happily chatter about the trials and tribulations and, as many of them went through the same process, will be happy to help you.

The time when you need help the most is when setting up the system. Unlike a game or simple application, host software doesn't normally come in a 'shove the disk in and run' condition. At the least, you will have to install it from a menu and at worst you could be up to your armpits in source code, trying to patch a modem driver.

With the phone line installed, modem, computer and host software installed, you'll need a kindly soul to log on and help you test the system. If you have a second computer equipped for comms you can do this yourself by logging on from your original phone line.

Be prepared to exhaust your store of expletives in the process. It can be a frustrating time, but the effort is worth it the first time the modem picks up the line and you see someone coming on line – your line.

Once you've got it up and running, you've got to attract users. Interesting software for downloading will attract the many who trawl bulletin boards for free software. Interesting and lively message and chat areas will keep them coming back. Once a regular user base is established, people will tell friends and that will keep the calls coming.

This will only happen if the board is well managed. A typical good bulletin board could take about 45 minutes a day in housekeeping. That's about six hours a week. Without this, a board will fade into insignificance.

It is a rewarding hobby but it doesn't run itself. If you have any specific questions about setting up and running a board, write to Tech Tips and we'll do our best to help.

A WALK THROUGH A BOARD

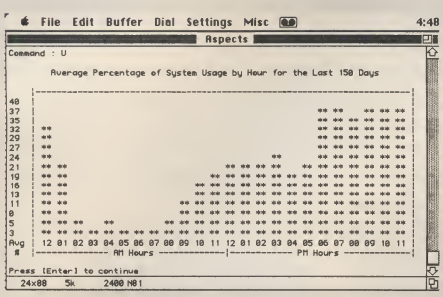
We took a stroll through Aspects, a board run by Mancunian Dave Gorski. It is a scrolling board, running at V21, V22, V23 and V22bis. This means you can go on at 300/300, 1,200/75, 1,200/1,200 or 2,400/2,400. The protocol is 8N1, and you should be sure to set this in your software if you intend to use this excellent board. You can find it on 061-792 0260.

Here are a few of the screens that we encountered on the way.

File Edit Buffer Dial Settings Misc 4:37
Aspects
Welcome to the Aspects Board
Sponsored by
Spectre Communications Ltd.
Dave Gorski - Sysop
V21,V22,V23,V22 bis detected at connect
by a Miracle WS3000 High Speed Modem
8 bits, 1 stop, no parity, full duplex
Operating 24 hours per day on
061-792-0260 Voice (061-792-4330)
from Cheetham, Manchester.
* All information and activities on *
* this system must be strictly legal. *
What is your first and last name? Keith Pomfret
Searching User File ...
Password:
24x80 0k 2400 N81

• The Welcome screen. This is the log on screen. A password for a current user or validation questions for a newcomer will get you past here.

• Stuck and not getting anywhere? Beat a tattoo on the Escape key to wake Aspects up. Other boards wake up when the Return or Enter key is pressed.


File Edit Buffer Dial Settings Misc 4:48
Aspects
Command : U
Average Percentage of System Usage by Hour for the Last 150 Days
AM Hours
PM Hours
Press [Enter] to continue
24x80 5k 2400 N81

• The user statistics screen bears out Aspects' popularity, but there aren't many people up at five o'clock in the morning!

File Edit Buffer Dial Settings Misc 4:51
Aspects
One moment please - Scanning message headers....
Number of messages available (by group)
1 in Group 2 AMIGA-LOCAL
23 in Group 9 PCMRS
67 in Group 12 COMMS
1 in Group 15 PENPAL
57 in Group 19 BUY
9 in Group 21 AMSTRAD
3 in Group 24 MUSIC
121 in Group 26 AMIGA
4 in Group 30 SPECTRUM
6 in Group 32 HARDWARE
1 in Group 6 SPECTRUM-LOCAL
31 in Group 11 BBS-NEWS
45 in Group 13 SYSOP_MESSAGES
26 in Group 18 LOCAL-CHIT-CHAT
111 in Group 28 IBM
88 in Group 22 COMMON-ROOM
25 in Group 25 ATARIST
2 in Group 27 CPM
196 in Group 31 QMH_XMS
4 in Group 33 HDCONF
CopyRight (C) 1989, 1990 - Mike Ratledge
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[C]onfigure Areas and Protocol
[Q]uit Quickpoint Mail eXpress
24x80 13k 2400 N81

• There are hundreds of messages in 20 different areas. Plenty for everyone if only we'd time to stay and read them all.

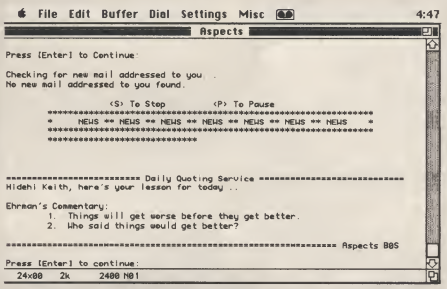
File Edit Buffer Dial Settings Misc 4:48
Aspects
<Q> QMX Offline Message Reader
<1> Amiga Lovers, Can YOU Spare The Time!
<2> Atari-ST I Know There's More Than Two Of You Out There.
<3> IBM-PC Could This Be The Start Of Something New!
<4> CP/M Do People Still Use Them?
<5> Spectrum The Dying Breed That Never Gives Up
<!> Logoff
Command : S
Aspects - Setup User Defaults
<S> Toggle Screen Clearing
<G> Toggle Graphics Mode
<C> Change City and State
<L> Change Length Of Screen
<P> Toggle Page Pausing
<F> Toggle Full Screen Edit
<U> Change Password
<-> Previous Menu <*> Main Menu <!> Logoff <T> Time Stats
Command :
24x80 4k 2400 N81

• Here's the page that allows you to change the user defaults. This lets you set up the screen, your password and all the other parameters.

File Edit Buffer Dial Settings Misc 4:52
Aspects
Aspects - Main System Menu
<F> Text Files, Inc, The Boards Complete File List.
<M> Messages From All (Combined) Boards
<S> Check And Alter Your Statistics
<I> System Information
<L> Local Chit Chat
<H> Mail To and From Your Sysop
<E> Echo And Netmail Area
<Y> Yell For The Sysop
<B> Best User Bulletins - Are You In There!
<Q> QMH Offline Message Reader
<1> Amiga Lovers, Can YOU Spare The Time!
<2> Atari-ST I Know There's More Than Two Of You Out There.
<3> IBM-PC Could This Be The Start Of Something New!
<4> CP/M Do People Still Use Them?
<5> Spectrum The Dying Breed That Never Gives Up.
<!> Logoff
Command :
24x80 14k 2400 N81

• The main system menu is the jumping-off point for anywhere on the board. There's even an option to (Y)ell for the sysop ... if he's around.

• There are conferences to suit all machines. The Spectrum is alive in Manchester. All it needs now is a few Spectrum comms people to pay it a visit.


File Edit Buffer Dial Settings Misc 4:47
Aspects
Press [Enter] to Continue:
Checking for new mail addressed to you ..
No new mail addressed to you found.
<S> To Stop <P> To Pause
NEWS ** NEWS ** NEWS ** NEWS ** NEWS ** NEWS ** NEWS
Daily Quoting Service
Hidehi Keith, here's your lesson for today ..
Ehrman's Commentary:
1. Things will get worse before they get better.
2. Who said things would get better?
Aspects BBS
Press [Enter] to continue:
24x80 2k 2400 N81

• News? No thanks, I'd rather have something light hearted. The daily quoting service brings a small chuckle at the end of a dry day.

A FEW NUMBERS TO CALL

Most of the abbreviations used are fairly self-explanatory, but there are a couple which are a little cryptic:
RB – Ring Back (dial the number, let it ring once, hang up & redial). W/d: Weekdays.

The baud rates section uses standard 'V-number' notation:
V21 – 300/300 baud.
V23 – 1,200/75 baud.
V22 – 1,200/1,200 baud.
V23v – 1,200/75 baud viewdata
V22b – 2,400/2,400 baud (V22bis).

AJL ELECTRONICS	0452 309125	V21/22/23/23v	24hrs
ALAN SOLOMON'S BB	0494 724946	V21/22/22b/23	24hrs
ALCHEMIST	0666 54597	V22/22b	24hrs
ALTERNATE REALITY	0352 85626	V21/23	24hrs
ALTERNATIVE REALITY	0959 76695	V21/23/23v	24hrs
ALTERNATIVE V/DATA	081-761 8220	V21/23/23v	24hrs
ARKHAM OPUS	081-952 5128	V21/22/22b/23	24hrs
ASPECTS	061-792 0260	V21/22/22b/23	24hrs
ATTIC	081-308 0466	V22/22b	24hrs
BATH BBS	0225 835841	v21/22/22b/23	24hrs
BBS09	0705 736025	V21/22/22b	24hrs
BUBBLE BBS	0793 851454	V21/22/22b/23	24hrs
BUZ BOARD	081-202 9175	V21/22/22b	24hrs
BUZBY'S GRAPEVINE	041-762 2000	V21/22/22b/23	24hrs
BYTE BACK!	081-959 8105	V23	24hrs
CHRONOS' LAIR	021-744 5561	V21/22/22b/23	24hrs
CIX	081-399 5252	V21/22/22b/23	24hrs
CLAPHAM JUNCTION	0234 64261	V21/22/22b/23	24hrs
CLUB 1512	081-204 8755	V21/22/22b/23	24hrs
CO-OP BOARD	081-316 6488	V21/22/22b/23	24hrs
D.I.E.	061-434 9907	V21/22/22b/23	24hrs
DIGITAL MATRIX	021-705 5187	V21/22/22b/23	24hrs
DIRECT-LINE 1	081-841 1847	V21/22/22b/23	24hrs
DIRECT-LINE 2	081-842 2030	V21/22/22b	24hrs
DOMAIN BBS	081-773 2422	V22/22b	24hrs
DWARFEN REALM	0376 501036	V23v	24hrs
EBBS-1	0274 541156	V21/23/23v	24hrs
EDDIE'S BBS	0635 71324	V21/22/22b/23	24hrs
EMPYRION	0792 580781	V21/22/22b/23	9pm-6am
EMU QBBS	041-762 2338	V21/22/22b/23	24hrs
EUREKA GATEWAYS	0603 250689	V23/23v	24hrs
EUREKA II	081-683 0629	V21/22/22b/23	24hrs
EYE-2	0276 66212	V21/22/22b/23	24hrs
FGNOME AT HOME	081-888 8894	V23v	24hrs
GOOBTEL	0602 706307	V21/23	24hrs
HOBBIT'S ARMPIT	0772 735122	V21/22/22b/23	24hrs
HOT-AIR OPUS	0579 70347	V21/22/22b	24hrs
ICHTHUS (TRINITY 3)	0734 461466	V21/22/22b/23	24hrs
ID2	0903 700771	V21/22/22b/23	24hrs
INDEX LINKED	0227 770403	V21/22/22b	24hrs
JOCKS AWAY!	031-225 5368	V21/22/22b/23	24hrs
JOLLY ROGER	081-742 1640	V21/22/22b/23	24hrs
JUNCTION	0270 580099	V21/22/22b	24hrs
JUSAVO	0324 32414	V21/23	24hrs
JUST THE PLACE	0705 258694	V21/22/22b	24hrs
K-WOOD	0608 83458	V21/22/22b/23	24hrs
KERNOW BB	0209 821670	V21/22/22b/23	24hrs
KEY-BOARD	0908 668398	V21/22/22b	24hrs
KEYDATA	081-676 0072	V23v	24hrs
LOG ON THE TYNE	091-477 3339	V21/22/22b/23	24hrs
LONDON BB	081-455 6607	V21/22/22b/23	24hrs
LONDON CITY MAG	081-468 7648	V21/23/23v	24hrs
LONDON CONNEXION	081-657 3240	V21/22/22b/23	24hrs
LONDON EMBASSY	081-366 1778	V21/22/22b/23	24hrs
LONDON METROPOLIS	081-519 1055	V21/22/22b/23	24hrs
LOONY BIN	0703 787489	V21/23	24hrs
MABBS	021-444 8972	V21/22/22b/23	24hrs
MACTEL METRO	081-543 8017	V21/22/22b/23	24hrs
MACTEL PHOENIX	0473 610139	V21/22/22b/23	24hrs
MADNESS BBS	0603 300947	V21/22/22b/23	24hrs
MAGIC CASTLE BBS	021-430 3761	V21/22/22b/23	24hrs
MBBS LECONFIELD	0964 550745	V21/22/22b/23	24hrs
MBBS MITCHAM IIC	081-648 0018	V21/23	24hrs
MIDGET GEM	0748 834836	V21/23	24hrs
MIND BOGGLES	0362 698867	V21/22/23	24hrs
MY LITTLE PHONEY	0865 773277	V21/22/22b/23	24hrs
NICC MID-WEST	0341 250377	V21/22/23	W/d: 10pm-8am
NORTH YORKS OPUS	0423 868065	V22/22b?	24hrs
NORWICH ONION BBS	0603 423305	V21/22/22b/23	24hrs
ODD-BALL	081-679 2583	V21/22/22b/23	24hrs
OPTIX	0482 872294	V21/23/23v	24hrs
ORGANIC GARDEN	081-464 3305	V21/22/22b/23	24hrs
OUT OF THE BLUE	081-668 7667	V21/22/23	24hrs
OWL SERVICE	0532 605876	V21/23	24hrs
PHANTOM	0226 732140	V21v/22v/23v	24hrs
PHOENIX	0249 817704	V21/22/23	24hrs
SANDIE'S BEACH	0905 774477	V21/22/22b/23	24hrs
SCARY MONSTER	0734 320297	V21/22/22b	24hrs
SCOT AIR	041-884 7170	V21/22/22b/23	24hrs
SCOTHELP-ST	031-313 2734	V21/22/22b/23	10pm-8am
SCOTTISH OPUS	041-880 7863	V21/22/22b/23	24hrs
TWILIGHT ZONE	081-788 0884	V21/22/22b/23	24hrs
TWILIGHT ZONE II	071-608 1485	V21/22/22b	24hrs
UK HEALTHLINK	0942 722984	V21/22/23	24hrs
V.I.T.A.S.	021-749 5860	V21/23	24hrs
VIKING EAST ANGLIA	0255 503048	RB V23v	7pm-7am
VILLAGE	081-464 2516	V21/22/22b/23	24hrs
VILLAGE FAYRE	081-569 1552	V23v	24hrs
WARP SPEED	0362 695314	V23	24hrs
WHAT'S ITS NAME?	0536 725180	V21/22/22b	24hrs
WHITE LIGHTNING	0635 37259	V21/22/22b	24hrs
WINCHESTER REMOTE	0962 69322	V21/22/22b/23	24hrs
WOMBLE BASE	081-979 9606	RB V23	6pm-11pm
WOODGREEN BBS	081-889 5624	V21/23	24hrs
WORLD OF CRYTON	0458 47608	V21/22/22b/23	24hrs

TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Tech Tips and we'll soon see you right. Send your sorry stories to Tech Tips, Beauford Place, 30 Monmouth Street, Bath BA1 2AP. Sorry, but we can only reply in print.

HELP! Making the grade

I realise that you probably receive a large number of letters on the 'which computer should I buy' theme but I hope that you have time to help me.

I have had an Atari STFM for three years and it has given me hours of enjoyment but it's time to upgrade. I am thinking of getting a Mega ST and would like impartial advice as my local computer dealer isn't helpful.

1 Are all Mega STs fitted with TOS 1.4?

2 Will my collection of games and serious software have compatibility problems with games in the same way that the STE did?

3 Will my Philips CM8833 monitor, Cumana CSA 354 disk drive and Star LC-10 work with the Mega ST?

4 Is it better/cheaper to buy a Mega 1 and upgrade to 2Mb RAM or save the extra and buy the Mega 2?

5 Will the launch of the TT bring about a price cut in the Mega range?

6 Is the keyboard on the Mega as big an improvement as some would have us believe?

I remain in your debt.

KP Taylor, Manningtree, Essex

A sensible chap you are too. So many people upgrade to machines with no compatibility to their existing computer. After a couple of years collecting software this can mean binning an investment worth much more than the machine. Anyway, to your questions.

1 It depends on whether the dealer is selling old or new stock. A simple way to find out is to run a piece of software called *Check ST* from Hi-Soft. This has a look at the system and reports back which operating system is present.

2 While generally there shouldn't be a problem, some games do patch into TOS for disk access. If your local computer shop isn't helpful, vote with your wallet and find one that is. When the STE came out a dealer near where I live put a huge sign in his window inviting people to try out an STE for compatibility. People were checking their entire collections (and going back to that shop to buy).

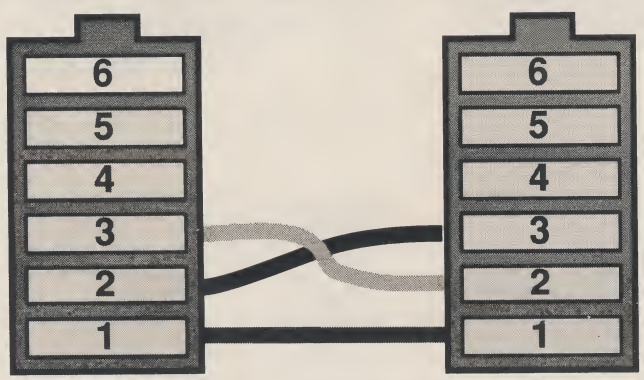
3 Yes.

4 Save the cash and buy a Mega 2. It has slightly different innards to the Mega 1 and is happier with add-ons. Certain pieces of additional hardware balk at the idea of sharing a port with a Mega 1.

5 A poll of opinions around the office suggests a definite perhaps.

6 No it's not. I tried them all, (STFM, STE, Mega One, Mega Two) and they all felt the same. The only perceived difference is that the Mega keyboards are remote and therefore more portable. *(Rubbish, the Mega's is much better than the ST's squelchy thing – Prod. Ed.)*

HELP! Wiring up two Specrums to talk to eachother



Caption for diagram

I own a Spectrum Plus 2 (no sarcasm, please) and have noticed an RS232 socket on the back (I always was the observant sort). All I know about RS232 is that it allows computers to transfer information to and from each other, so I am pretty clueless about it.

I was, and still am, wondering whether it is possible to connect, with a suitable lead, my Plus 2 and a friend's Spectrum Plus (with an Interface 1, which also has an RS232 socket) and with appropriate software running on both computers, be able to communicate across a room.

I need to know what software I would need to buy or write, and what lead I would need to connect the two Spectra(!). Is it commercially available and what are the pin-outs?

Chris Moore, Ferring, Sussex

The RS232 will allow two computers to communicate, and with a modem and phone line will allow you to communicate anywhere that there's a phone and computer.

The Plus 3 has the same RS232 socket as the Plus 2 and the reference section of the manual suggests that the necessary lead is available from a Sinclair stockist. To connect two machines together locally, the cable required is called a null modem and is wired in the manner shown in the diagram.

There is software to allow Spectrums to communicate, but I am reliably informed that it doesn't like the built-in RS232 port. The sensible option is to add a modem/serial port called a VTX 5000. This attaches to the expansion port (the wide one at the back) and as well as doing all the untidy squelchy bits, also includes software that will enable you to either communicate locally or access the many bulletin boards and on-line systems that offer Spectrum areas and downloads.

HELP! A true pro

In Amiga *Protext*, what does the message 'too many index words' mean? I see this when I try to join the two main dictionaries together. I cannot find an explanation in the manual. Also, why is it that when I save a file, a small part of arnore2 (the supplementary dictionary), the spell checker will not recognise the first 14 words?

Is it true that there's an update on the way, one that will show proportional printing on the screen?

Alan Foster, Bassett, Southampton

The problem that you are having with the index can be solved by a quick trip to the configuration menu (Esc to get into command mode, then CONFIG followed by the return key to get to the configuration menu). Under memory options, the maximum number of index words can be raised. As the dictionary size is increased, so must its index size. The information was culled from Chapter 21 (p241) of the manual and is relevant to the current version, V4.2.

You haven't said whether the spell checker won't 'check' the words or whether it just doesn't see them. I suspect that the problem is tied up in the missing indices and will sort itself out when you make the prescribed adjustments to your configuration.

Your speculation about an update may indeed be true. We hear rumours of a shiny new all-singing, all-dancing version five but Arnor are keeping it well under wraps.

HELP! The sequel

A few months ago I wrote to you asking for help on which printer to buy, which you gave. Thank you. I bought a Star LC-10 colour printer to go with my Amiga and bought the *Publisher's Choice* DTP pack-

age

All was well for a couple of days and I did loads of pointless screen dumps of the Clip Art disk included in *Publisher's Choice*.

On the third day, I had an assignment for college. I put food pictures and text on a page. Fine, no problem, until I tried to print the page. Then I received the rather unfriendly message 'Cannot print, computer not graphic capable'.

I tried a different approach and talked kindly to it. It had, after all, spent two days printing the pictures on screen, so why should it be convinced that the printer can't print? It manages quite nicely with text output from the word processor but won't print graphics.

PG Kerslake, Swansea, W est Glamorgan

The Star LC-10 should be able to print the output from *PageSetter*, the DTP package part of *Publisher's Choice*. I spoke to the firm that market it and it confirmed that it will happily drive a Star LC-10. As you are getting output from the word processor, that suggests that your printer lead is OK, so it could be the printer driver that you are using. A printer driver is a program that takes the output of a word processor, art package or DTP program and translates it into a form that can be understood by the printer. This allows many printers to work from the same program.

If it is a simple generic printer driver designed purely for an ASCII output, it wouldn't be able to handle bit image graphics that *PageSetter* would need to send to the printer for DTP output.

Check the manual that comes with the DTP program for any information on setting the printer drivers. Also check in preferences from the Workbench that you have a suitable printer driver set for normal use. If you are using a simple driver for your word processor, it may not be taking advantage of some of the features offered by your printer.

HELP! Curiosity shop

Not a problem, more a curiosity and a mystery. I'm using an Acorn A3000 and a Microvitec1451 colour monitor, though I suspect that the effect would be the same in any combination.

In mode 14, I asked the computer to print a small rectangle of colour using 15 units of red, no green and no blue. I asked for another rectangle using 15 units of red, no green and 6 units of blue.

The second rectangle, crimson rather than vermillion, looks less bright than the first despite emitting more light. Blue is a dim-looking colour I know, but the point is that it isn't ousting any of the red. It's just sitting there – otherwise there'd be some black.

I suppose it is more to do with psychology or physiology than with computing but has anyone any idea what's happening?

Tony Kelly, Llanwrda, Dyfed

Ermmmm. Wavelength, refactory colours, complimentary colours, albedo, reflective light... I'll be honest, I don't know. I suspect that it comes under that wide band of strangeness that makes a red tie look black under a blue light or light blue cars look yellow under sodium street lights. I'm sure one of our fellow techtippers will supply a colourful answer.

HELP! PC on the Amiga

About a month ago I bought an Amiga. I am pleased with it and managing to operate it easily. I was wondering if there's a PC emulator for it.

That would be handy for me as I could use my uncle's PC software. If there is one, how much is it and where would I get it from?

I also need to know about modems. Where do they attach to the computer? What are the V codes (V21/V23 etc)? What software do I need? Can I connect an Amiga to a PC using a modem or do I need a PC emulator to do it? Finally, what are the phone rates for using a modem? Are they like 0898 numbers?

David Robinson, Wargrave, Reading.

There are indeed PC emulators for the Amiga. You don't say which model of Amiga though. For the B2000 there's the hardware Bridgeboard. This is a complete PC on a board that fits into one of the slots inside the B2000 (or A2000). It is available as an AT or an XT. These cost from about £350 for the XT card up to about £700 for a fully-specified AT card. There is a hardware add-on for the A500, which costs £299 from KCS on 091-490 1919. Software emulators also exist but these tend to be picky and don't run all software. As they have to emulate hardware in RAM they tend to be slow. Try the advertisements in Shopping Express and our sister magazine *Amiga Format* for best prices on Amiga add ons. If you intend to use your uncle's software on your Amiga remember that you must use the originals and with his permission. If you copy a game for your own use you are breaking the law and are liable for prosecution for software theft.

The V codes are data transmission speeds. See our feature on bulletin boards last week and this (page 52).

Providing you have a serial port on the PC, you can connect it to the Amiga for file transfer using a null modem cable (available from good computer shops). This is normally a simple three wire link that allows the machines to communicate. You will need communications software to get the two machines talking. A good piece of communications software for the Amiga is *Access!*. It is available in the public domain and can be obtained from any of the Amiga PD libraries.

Using a modem costs the same as any other phone call, unless the number you access is a commercial system. To log on to a bulletin board for half an hour would cost the same as talking on the phone for half an hour. With a commercial system like Microlink, you pay for the phone call plus a time charge for being on line.

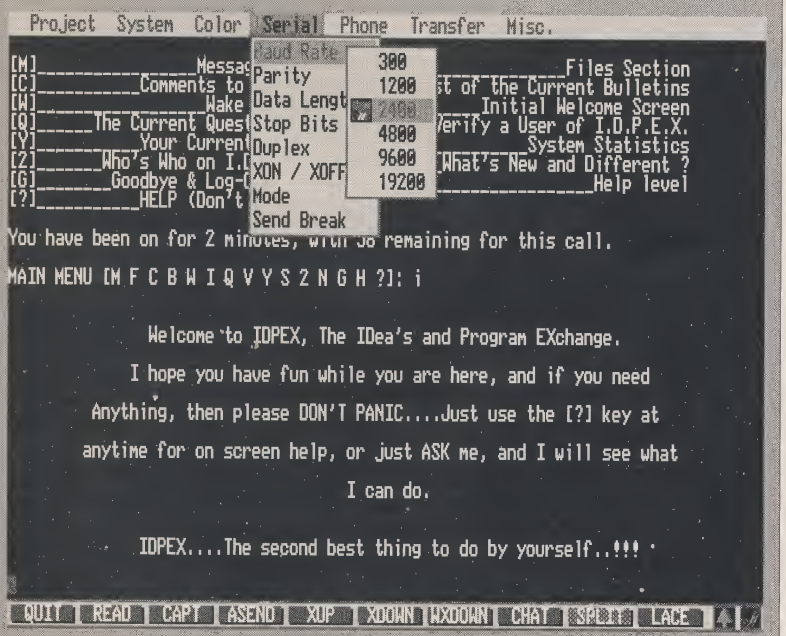
HELP! Needed: a miracle worker to make my modem work

I recently obtained, for nothing, a Miracle Technology WS2000 modem. I didn't get a manual with it and I am at a loss as to how to operate it. I have connected it to my Amiga using a 25-D pin male (modem) and 25-D pin female (Amiga) and am using the PD utility *Access!* V1.4.

The settings of the buttons are as follows. Lower left to 'ON LINE', upper left to 300/300 and the right one to ORIG. Is this correct for 300 baud? How could I arrange them to download at 1,200 baud?

When I select dial from *Access!*'s phone book the TX Data light flashes briefly then that's it (The power and on line light are on constantly). *Access!* needs modem return values for auto-dialing. Could this be my problem, because there is a space for them in the define window.

John Bown, Bideford, Devon


Project System Color Serial Phone Transfer Misc.
Baud Rate
Parity
Data Lengt
Stop Bits
Duplex
XON / XOFF
Mode
Send Break
300
1200
2400
4800
9600
19200
Files Section
Initial Welcome Screen
System Statistics
What's New and Different ?
Help level
You have been on for 2 minutes, with 30 remaining for this call.
MAIN MENU [M F C B W I Q V Y S Z N G H ?]: i
Welcome to IDPEX, The IDea's and Program EXchange.
I hope you have fun while you are here, and if you need
Anything, then please DON'T PANIC....Just use the [?] key at
anytime for on screen help, or just ASK me, and I will see what
I can do.
IDPEX....The second best thing to do by yourself..!!!
QUIT READ CAPT ASEND XUP XDOWN WXDOWN CHAT SPOOL LACE

• Acess! is an excellent PD comms program for next to nothing.

Firstly, although the WS2000 is no longer made, there are a lot around doing sterling service and the manufacturer, Miracom was happy to help me answer your queries. The WS2000 is a manual modem, so you'll first need to connect a phone to the socket in the back of the modem and the modem to the telephone socket on the wall. To go on line at 300/300 and access a scrolling bulletin board, the switches should be set as follows. Top left, 300/300. Bottom left, LOCAL TEST. Right, 300 full duplex originate. You must then dial the number of the bulletin board that you wish to access and monitor the call with the telephone. When the bulletin board 'picks up' the line, you will hear a noise like a very poorly herd of small mice whistling Beethoven's Ninth. Upon hearing this, move the bottom left switch to 'ON LINE' wait a couple of seconds for the carrier signals to connect and put the phone down. You should now be on line.

The 1,200/75 mode for viewdata that the WS2000 supports wouldn't seem to be a software option on the Amiga. The preferences page of the Amiga (or the manual) makes no mention of split baud rates. It is possible to access a 1,200/75 bulletin board with an Amiga using an intelligent modem such as a Pace Linnet which can 'buffer' the speeds to match, but I fear that the WS2000 is unable to do that ... unless anyone out there knows different.

EXPRESS MAiL

Britain's liveliest computing forum – packed with comment, controversy and conflict. Write and tell us what you think! Reach us at: *Express Mail, 30 Monmouth St., Bath BA1 2AP* Sorry, no personal replies, even with an sae. This week's replies written by Keith Pomfret.

Let's twist again

I will keep this letter short and simple so that you do not edit it and twist my words, as you have done to so many others.

First, I am getting sick and tired of your complacency and your basic attitude towards those who take the time and effort to write into the letters page. Grow up, and try to be more subjective (*sic*) with your replies. I admit I often find some of the replies funny but the majority are just downright ignorant and patronising. Is your name God by any chance, because you certainly behave like it is!

My main point is directed towards your decision to cover those infantile hand-held toys and kids' consoles. In absolutely no way do they qualify as computers and should not be treated as such. My advice is to ignore them and they might go away. I want to read about computer related matters, not childish games machines.

But then again I am only part of "...a small number of po-faced readers...".This I doubt very much, and just remember who pays your wages before you so readily trample on your readers.

I now expect that you will dismiss my views, call me some silly names and ask where my sense of humour is. But I felt I had to make my views known.

D. Phillips, Bangor, Co. Down.

If the above letter is typical of your input into the public computer forum then I can promise you that any similar offerings will be consigned to the corporation filing tip. Everything from the analytical engine to the abacus counts as a computer in purely literal terms.

Still as you seem to prefer the pedantic approach, the *Concise Oxford English Dictionary* contains this in its description of 'computer': "Automatic electronic apparatus for making calculations or controlling operations that are expressible in numerical or logical terms".

A quick glance at the source code of any console game should convince you that games consoles and handhelds are indeed powerful computing engines.

More C64...

I feel that I must put pen to paper and notify you of the ridiculous way you neglect the Commodore 64 computer in your magazine.

The C64 has a superior sound chip to all 8-bit micros (and the Atari ST) and yet you give no mention of its amazing MIDI capabilities in your feature, instead you review Spectrum systems! You make no mention of its vast public domain program range in another feature even though, next to the PC and BBC range, it has the highest collection available (I have hundreds of disks full).

The magazine lacks reviews of good art software (how you can call the *Advanced Artswop* the representative of the range I will never know), scanners and digitiser (there are loads of these available for the C64, eg the Video Byte III digitiser) in your shopper guide, even though the C64 was designed for such and is able to scan at 200DPI.

In fact the C64 has an extremely large amount of software and peripherals available to it.

I am sorry about putting it so bluntly, but I believe that the 8-bit Amstrads get more of a mention than the more popular C64 computers – which are better

Upgrades, Amigas and Ocean's notions

I read with interest Jason Holborn's review of Checkmate's A1500 in *Express* 78, as it was an upgrade path I had considered. I would like to express reservations at Jason's advice to forget upgrading to an Amiga B2000 and opt for the A1500.

When compared to the official Commodore upgrade (which I am told has been extended to June) the costs tell a rather different story. The A1500 is quoted as being £230 and gives one expansion slot, add to that the cost of the OverRider to give an additional three slots, and you have a total of £450 if purchased together or £480 when bought separately. The Commodore deal gives you a brand new 2000HD which is equipped with a A2091-40 card containing a 40Mb Quantum drive, for £1,100 plus your old A500.

To obtain a realistic comparison add the price of the drive and controller to the A1500 kit, giving a total price of around £950 for a system with less expandability than the 2000.

The fact is that, although Jason is quite right in saying the A1500 is a very clever idea, I think he has to remain objective in his reviews. To tell people who are thinking of upgrading to the 2000 to "Forget it and buy yourself an A1500" is most unprofessional. Such a comment should have been qualified; what about the owners of old A500's with 1.2 ROMs and the old Agnus chip? Wouldn't they be better off with a brand new machine with the latest upgrades and full warranty?

While on the subject of Amiga, I was pleased to get the chance to see the new A3000 at the *Which Computer?* Show doing 3D rendering in the time which my old A500, running *DPaint*, would take to fill a circle. What was less impressive was the attitude of the staff on the Commodore stand. There are all these sexy and impressive demos of applications running on the machines, but they make not the slightest effort to actually sell the Amiga. If other manufacturers developed a product of the Amiga's potential they would be dragging the punters in by the ears to see it.

The various salesmen I spoke to knew pitifully little about some of the software packages being demonstrated, and the Amiga's capability when running them, and I would have thought they could have made the effort to get acquainted with the major packages, such as *Professional Page*.

I think that it is very significant that most of the pioneering development work on the Amiga has been carried out by third party developers such as GVP and New Tek. It speaks volumes that, just as the A3000 is given it's UK debut, GVP are marketing a 40Hz 68030 card in the USA.

Finally, Roger Musson's letter in *Express* 79 concerning *F29 Retaliator*, I must agree that the air-to-ground target acquisition system does not work as it should. It will not 'acquire' targets, which is essential for effective use of many of the ground attack weapons provided. I'm most surprised that "some of the world's most experienced games players" didn't notice this, but judging by the number of games reviews appearing in *Amiga Format* lately, they probably didn't have time.

It's quite bad enough that Ocean have put out such a hyped package still containing bugs, but their arrogant and indifferent attitude when Roger phoned them is scandalous. The unacknowledged motto of the games software industry must go something like "Grab the punters money and give them any old crap". There must also be some consumer law preventing Ocean from stating on the box 'Real-time cockpit displays – including true radar' when it appears not to show anything.

Come on Ocean sort it out.

Steve Laing,Windsor, Berks.

The A2000 upgrade has indeed been extended to the end of June, call 0628 770088 for details of participating distributors.

Now then, when a reviewer looks at a product and gives an opinion, that can only be based on what is available at the time. The speed at which the computer marketplace evolves is so rapid that a product launched at a show at breakfast time is obsolete in time for morning coffee.

It's easy to complain about the staff on stands at shows but they can't be expected to know everything. If they are polite and do their best to either get the information or make sure it is sent on to you then that is the best you can expect. If they don't then buy someone else's product. If we all did that, they'd soon pull up their socks.

Games companies have long had a habit of printing the packaging for a game so long before the software is ready that it often bears no resemblance to what goes inside. I too wish they'd stop.

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equipped. I strongly advise you get a hold of the FSSL catalogue just to see how many there are.

One last thing, the C64 column is totally out of date, anybody who doesn't know how to put another hole in a 5.25-inch floppy needs their brains testing (*Express* 79).

Overall, I believe you show an amazing amount of bias towards the other, less popular machines. I recommend you show this to the hundreds of C64 users who believe what you print about 64s. Please change your attitude towards the C64.

P.S. Keep up your good work in the news section of the magazine, I have been a reader for quite a while now and, on the whole, I find *Express* very informative. Sorry about the writing, I usually use a word processor (on my excellent Mac Emulator gear, on my C64!).

Stuart Smith, Tylderley, Manchester

...and yet more

Being a musician who cannot afford an Amiga, ST or PC, I surveyed the market for a computer with some musical prowess at an affordable price. I selected the Commodore 64C, as its sound chip is far superior to that of the Sinclair Spectrum or the CPC.

When I saw that your magazine was to run a series of articles on music on computers I took up a weekly subscription, reading with interest what was available for the different formats. To my disappointment I note from *Express* 80 that you are not going to mention the Commodore 64. Why?

This humble machine costs only £130 and for a mere £30 (from UK Home Computers) you can pick up the Music Expansion System' with five octave keyboard, full digital synth, polyphonic synth and three- or five-track (MIDI) sequencer. This system, incidentally, used to cost £103! I also use a digital drum machine with sample drums for under £2. (*Micro Rhythm Plus*).

I also understand that there is a sampling unit available from Datel Electronics but this costs about £50 which I don't have spare at the present.

I was hoping that your experts were going to open my eyes to whatever else may be available but apparently not.

Another question I should like to ask is whether there are any public domain libraries for C64 cassettes (I experience very few loading problems on cassette and the price of a disk unit is prohibitive). Please don't forget all us C64 owners.

H. Wright, Wickford, Essex.

The C64 is a good music computer and has been well supported for some time. Eight years ago there was an add-on ROM cartridge sequencer for the C64 so check out Shopping Express.

In the series of articles mentioned there wasn't enough room to cover every computer and every package. More's the pity, but that's life.

As for PD cassettes, we've passed your query on to our columnist ...

MacWIMPs

I repudiate your assertion that the 'hard boys' of the computer world resent the Macintosh for allowing computer illiterates to perform computing tasks, thus usurping the prerogatives of the initiated. What is resented, and properly, is the notion that this easily acquired WIMP driving ability constitutes general computer expertise. WIMP environments exist to protect the user from the need to acquire computer knowledge, and they do an excellent job.

In my last letter, I asked (in mock innocence) how one goes about upgrading a Mac to a colour display, and your Keith Pomfret replied that his Mac already had colour, thus indicating that at least one of your Mac 'experts' is confused about the difference between the Mac and the Mac II. So, I have designed a simple test, requiring no difficult keyboard skills, to tell the one from the other. Just look in your wallet. If more than three thousand pounds is missing, then what you have there is a Mac II.

Iolo Davidson, Tetbury, Gloucestershire.

Hmmm. I looked in my wallet and all the money was intact.

A quick look in a pile of old releases tells me that even the lowly Plus can be upgraded to colour by welding some bits on. On the subject of your beloved PC, I think that Windows 3 looks like a piece of Amiga PD. Not everyone agrees with me but I'm entitled to my opinion too.

NEXT WEEK

GETTING AROUND
Practical guide to laptop computing

BOARD STIFF
Setting up your own bulletin board

ROM STUFF
How CD-ROM is finally here in force

PLUS

Columns for your machine, all the regulars and the most up to date news service in computing

OUT THURSDAY

Win Mini Office for the CPC or ST

Just the Word

At last, CPC owners get their chance to win an attractive prize this issue, and so do the ST crowd as we have Mini Office software from Database available for both machines.

"Good enough to fulfil the entire software needs of many a small business," was *Amstrad Action*'s verdict on *Mini Office II*, a six-module package for the CPC. Contained in this integrated suite of programs are a word processor, database, label printer and spreadsheet – plus both graphics and communications modules. We have six each of cassette and disk versions to give away this week.

For the ST, meanwhile, *Express* can offer four copies each of the *Mini Office* ST Presentation Graphics, Communications and Spreadsheet modules. That's a total of 24 prizes to be won across the two machines.

Mini Office II costs £19.95 (disk) or £14.95 (cassette); any ST module would set you back £24.95, but you can win one of these prizes for the price of a postage stamp by answering one simple question correctly.

Somewhere in this issue of *Express* – and it could be either in the editorial or in an advertisement – is the word MELON. Find the word, then fill in the number of the page it appears on in the space provided on the answer form.

Tick the relevant box for your prize (don't forget to write down your preferred module if you are an ST user), and we will do our best to meet your preference – although winners will be awarded an alternative module if all four of the chosen item have already been won.

Fill in your name and address and send your entry to *Mini Office* Competition, *New Computer Express*, 30 Monmouth Street, Bath BA1 2AP, to arrive not later than Monday June 18.

The first correct entries out of the hat for each category will be the winners, and the editor's decision is final.

*

WINNERS!

The word FISH appeared several times in *Express* 80, as many readers noticed. This strange occurrence was caused by what is technically known in the trade as a printer's idiot. All reasonably thought out answers were accepted as correct, including letters pointing out this completely deliberate error (for which the culprit has been fed to a swimming pool full of piranhas).

The first ten 'correct' entries pulled out of the Editor's executive carrier bag were:

Francis Carroll, Waterford, Ireland; M C Tracey, Chesterfield, Derbyshire; Gordon Haigh, Aldershot, Hants; Mark Stebbing, Hull, Humberside; Andrew King, Oadby, Leicester; James Wilson, Basildon, Essex; Linzi Breedon, New Eastwood, Nottingham; Raymond Pluck, Guiseborough, Cleveland; P Leonard, Southport, Merseyside; John Bishop, Hackney, London.

Each wins a jolly spiffing Naksha Mouse for their Amiga, ST or Amstrad PC as applicable, and should expect delivery shortly.

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For the more serious or professional applications user, Commodore have a selection of systems based around the expandable Amiga 2000, at prices from £1295+VAT. The A2000 features a full 1Mb RAM (expandable to 9Mb), 9 system expansion slots, plus IBM compatibility with the use of PC-XT or PC-AT bridgeboards. Complete and return the coupon, putting a tick in the A2000 box, for details of A2000 computer systems.

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Before you decide when to buy your new Amiga computer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Amiga, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new products? At Silica Shop, we ensure that you will have nothing to worry about. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest Free literature and begin to experience the "Silica Shop Service".

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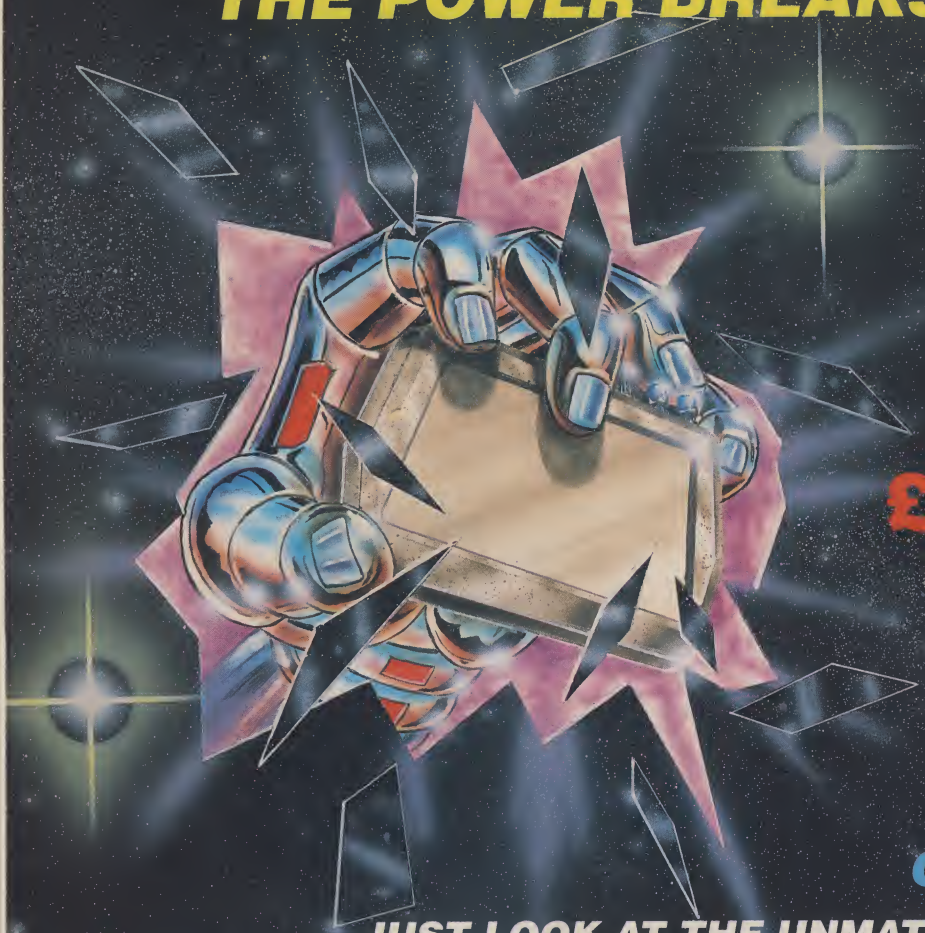

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